



<https://theses.gla.ac.uk/>

Theses Digitisation:

<https://www.gla.ac.uk/myglasgow/research/enlighten/theses/digitisation/>

This is a digitised version of the original print thesis.

Copyright and moral rights for this work are retained by the author

A copy can be downloaded for personal non-commercial research or study, without prior permission or charge

This work cannot be reproduced or quoted extensively from without first obtaining permission in writing from the author

The content must not be changed in any way or sold commercially in any format or medium without the formal permission of the author

When referring to this work, full bibliographic details including the author, title, awarding institution and date of the thesis must be given

Enlighten: Theses

<https://theses.gla.ac.uk/>
research-enlighten@glasgow.ac.uk

MONEY AND REAL ECONOMIC DISPARITIES
BETWEEN NATIONS AND BETWEEN REGIONS

by

SHEILA CHRISTINE DOW.

A thesis submitted in fulfilment of the
requirements for the degree of Doctor of
Philosophy

Department of Political Economy
University of Glasgow.

October 1981

ProQuest Number: 10656492

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10656492

Published by ProQuest LLC (2017). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

Thesis
6650
Copy 2



TABLE OF CONTENTS

	Page No.
Table of Contents	(i)
List of Tables	(iv)
List of Figures	(viii)
Acknowledgements	(ix)
Summary	(xi)
 INTRODUCTION	 1
 <u>Part I</u>	
Chapter 1 THEORETICAL CONTEXT	
Introduction	5
General Treatment of Money and Distribution	6
Money in Regional Economics	10
Money in International Economics	18
Financial Structure	32
Conclusion	39
 Chapter 2 POLICY CONTEXT	
Introduction	54
International Monetary Fund	55
European Economic Community	65
The Regional Aspects of the Domestic Financial Structure	71
Conclusion	77
 Chapter 3 MONETARY THEORY - A CHOICE OF APPROACH	
Introduction	89
The Monetarist Approach	90
The Keynesian Approach	92
Conclusion	98

Chapter 4	THE NATURE AND CAUSES OF REAL INCOME DISPARITIES	
	Introduction	106
	Equilibrium or Non-Equilibrium Analysis	108
	The Equivalence of Regional and Inter- national Disparities	112
	Interdependence	116
	Conclusion	119
 <u>Part II</u>		
Chapter 5	A SPATIAL THEORY OF DEMAND FOR MONEY	
	Introduction	128
	Transactions Motive	131
	Speculative Motive	138
	A Cross-Section Demand for Money Function	146
	Application to Regions	149
	Application to Nations' International Reserves	157
	Conclusion	163
 Chapter 6	 A SPATIAL THEORY OF MONEY SUPPLY	
	Introduction	170
	Trade and Direct Investment Flows	173
	Other Autonomous Capital Flows	181
	Public Sector Flows of Funds	192
	A Model of Bank Lending Behaviour	197
	Conclusion	217
 Chapter 7	 THE ADJUSTMENT PROCESS	
	Introduction	231
	A Diagrammatic Representation	232
	A Multiplier Approach to Income Adjustment	252
	Conclusion	257

Part III

Chapter 8	THE TEMPORAL EVIDENCE	
	Introduction	263
	The Long-Run Evidence	264
	The Short-Run Evidence	286
	Conclusion	295
Chapter 9	THE REGIONAL EVIDENCE	
	Introduction	300
	The UK Regions	303
	The Canadian Provinces	307
	The US Census Regions and Federal Reserve Districts	328
	Conclusion	355
Chapter 10	THE INTERNATIONAL EVIDENCE	
	Introduction	363
	Domestic Portfolio Choice: International Comparisons	366
	Demand for International Reserves: International Comparisons	375
	Supply of International Reserves	384
	Conclusion	393
Chapter 11	CONCLUSION	
	Introduction	397
	Summary of Contents	397
	Policy Implications	402
	Conclusion	406
Appendix 1	MONEY MULTIPLIERS FOR ECONOMIES WITH DIFFERING FINANCIAL CONDITIONS	408
Appendix 2	MONEY MULTIPLIERS COMBINED WITH INCOME SUPERMULTIPLIERS FOR ECONOMIES WITH DIFFERING FINANCIAL CONDITIONS	414
	Bibliography	417

LIST OF TABLES

	<u>Page No.</u>
<u>Chapter 6</u>	
Table 6.1 Reserves Injection into Each Bank	210
Table 6.2 Reserves Injection into Each Bank; Lower $L_p^P:S_c^P$	210
Table 6.3 Reserves Injection into Each Bank; Lower $L_c^C:L_p^C$	213
Table 6.4 Reserves Injection into Each Bank; Higher Rate of Non-Bank Capital Outflow from Periphery to Centre	213
Table 6.5 Reserves Injection into Periphery Bank; Falling $L_c^C:L_p^C$, Rising $L_p^P:S_c^P$	215
Table 6.6 Reserves Injection into Periphery Bank; Unchanged $L_c^C:L_p^C$ and $L_p^P:S_c^P$	215
Table 6.7 Reserves Injection into Each Bank; No Periphery Bank Reserves Held with Centre Bank	218
<u>Chapter 7</u>	
Table 7.1 Money-Financed Addition to Government Spending in Centre	255
Table 7.2 Money-Financed Addition to Government Spending in Periphery	255
Table 7.3 Money-Financed Addition to Government Spending in Periphery; Increased $L_p^P:S_c^P$	258
<u>Chapter 8</u>	
Table 8.1 Income Velocity of Circulation of M_0 , M_1 and M_3 , U.S.: 1870-1979 (decade averages)	266
Table 8.2 Income Velocity of Circulation of M_0 and M_3 , U.K.: 1880-1979.	268
Table 8.3 Rate of Turnover of Bank Deposits, U.S.: 1945-75 (Selected Years)	270

Table 8.4	Rate of Turnover of Bank Deposits, U.K.: 1945-75 (Selected Years)	271
Table 8.5	Ratios of Monetary Aggregates, U.S.: 1963-79 (end-year, s.a.)	274
Table 8.6	Ratios of Monetary Aggregates, U.K.: 1963-79 (4th quarter, s.a.)	275
Table 8.7	Ratios of Bank Reserves and Currency in Circulation to Deposits, U.S.: 1870-1970 (Selected Years, mid-year)	277
Table 8.8	Composition of Assets of Commercial Banks U.S.: 1946-70	279
Table 8.9	Composition of London Clearing Bank Assets, U.K.: 1941-75	280
Table 8.10	Composition of Financial Assets of Households, Personal Trusts and Non Profit Organisations, U.S.: 1946-70	282
Table 8.11	Composition of Assets of the Personal Sector, U.K.: 1957-1977 (Selected Years)	283
Table 8.12	Composition of Financial Assets of Nonfinancial Business, U.S.: 1946-1970.	285

Chapter 9

Table 9.1	GDP at factor cost Per Capita, U.K. regions: 1966-78 (Selected Years)	304
Table 9.2	Building Society Net Advances as a Share of Net Receipts, U.K. Regions: 1974/75-1977/78	306
Table 9.3	Gross Provincial Product Per Capita, Canadian Provinces: 1961-1978 (Selected Years)	308
Table 9.4	Rate of Turnover of Demand Deposits, Canadian Provinces: 1974-78 (Selected Years)	310

Table 9.5	Income and Deposits: Velocity and Rates of Growth, Canadian Provinces: 1978 and 1974-78	312
Table 9.6	Composition of Assets, Canadian Regions: 1970	315
Table 9.7	Composition of Assets by Income Class, Canada: 1970	316
Table 9.8	Inter-Provincial Financial Flows, Canadian Provinces: 1978	318
Table 9.9	Rate of Return on Capital, Canadian Provinces: 1961-78 (Selected Years)	322
Table 9.10	National Monetary Conditions and Provincial Demand, Canadian Provinces: 1956-74	324
Table 9.11	Credit Ratings and Yield Spreads, Canadian Provinces: 1977-78	327
Table 9.12	Per Capita Personal Income, U.S. Regions: 1840-1978 (Selected Years)	329
Table 9.13	% of Families using Credit Cards, by Location, U.S.: 1970	332
Table 9.14	% of Families using Credit Cards, by Income Class, U.S.: 1970	333
Table 9.15	Composition of Financial Assets by Wealth Class, U.S.: 1958-72 (Selected Years)	334
Table 9.16	Asset Structure of Corporations by Size of Total Assets, U.S.: 1975	336
Table 9.17	Portfolio Structure of Commercial Banks by Class of Bank, U.S.: September 1978	337
Table 9.18	Per Capita Income, Treasury Operations and Regional Payments Imbalance, U.S.: 1955	342
Table 9.19	Asset Structures of Insured Commercial Banks, U.S. 'Peer Group' Regions: end 1978	345
Table 9.20	Income:Deposit and Loan:Deposit Ratios and Bank Branching Index, U.S. Census Regions: 1978 IV	347

Table 9.21	Relative Per Capita Income, Mean Rate of Return, Credit Risk Index and Bank Branching Index, U.S. Federal Reserve Districts: 1950-1971, 1978, 1976	351
Table 9.22	Weighted Average Interest Rate (%) by Size of Loan (\$'000), U.S.: February 1977	353

Chapter 10

Table 10.1	Per Capita G.N.P., as a Proportion of the World Average, Country Groupings: 1960 and 1978	365
Table 10.2	Financial Ratios, Country Groupings: 1978	367
Table 10.3	Variability of Income Velocity of Circulation, Country Groupings: 1953-1968	374
Table 10.4	International Reserve Holdings Relative to G.N.P. and Imports, Country Groupings: 1978	377
Table 10.5	Eurocurrency Portfolio Composition, Country Groupings: End 1978	380
Table 10.6	Composition of Balance of Payments Relative to G.N.P., Country Groupings: 1978	386

Chapter 5

Figure 5.1	Short- and Long-Run Demand for Money by Per Capita Income Level	147
Figure 5.2	Demand for Currency Relative to Income by Per Capita Income Level	153
Figure 5.3	Demand for Currency and Deposits Relative to Income by Per Capita Income Level	155
Figure 5.4	Currency:Deposit Ratio by Per Capita Income Level	156
Figure 5.5	Demand for Gold, F.E. Demand Deposits and F.E. Time Deposits	160

Chapter 6

Figure 6.1	Money Supply Relative to Income by Per Capita Income Level	223
------------	--	-----

Chapter 7

Figure 7.1	Money Demand and Supply with Pessimistic Expectations	233
Figure 7.2	Money Demand and Supply with Pessimistic Income Expectations and a Public Sector Response	236
Figure 7.3	Money Demand and Supply with Optimistic Expectations	237
Figure 7.4	Money Demand and Supply under a Restrictive Monetary Policy: Two-Region Configuration	243
Figure 7.5	Money Demand and Supply with Expectations of a Centre Deficit: Two-Country Configuration	248
Figure 7.6	Money Demand and Supply with an Increase in Supply: Two-Country Configuration	251

Chapter 8

Figure 8.1	The Interest Rate in a Business Cycle Expansion: IS-LM Representation	294
------------	---	-----

ACKNOWLEDGEMENTS

The basic ideas expressed in this thesis have been formed over a long period, aided by discussions with colleagues in the Bank of England and the Department of Finance of the Government of Manitoba, with Professor Clarence Barber of the University of Manitoba and Professor Syed Ahmad of McMaster University.

My greatest debt is owed to Professor Thomas Wilson who supervised the process of building these ideas into their present form. His comments and advice went to the heart of the theoretical and empirical issues involved while, at the same time, stimulating new and fruitful lines of thought.

I have been aided also by the helpful comments of the following groups to whom I presented papers arising from my research: the University of Glasgow Political Economy Workshop, the Thirteenth Annual Meeting of the Canadian Economics Association, the University of Stirling Economics Workshop and the S.S.R.C. Urban and Regional Economic Study Group.

The S.S.R.C. provided financial assistance, both in the form of a Studentship in 1978-79, and also in the form of a travel grant to support visits to a variety of institutions in Canada and the United States in the summer of 1979. During this trip, the Federal Reserve Bank of New York arranged a particularly useful programme of interviews. The Esmée Fairbairn Charitable Trust provided funds to cover the cost of copying the final draft.

I am grateful to the University of Stirling for encouraging me to spend time completing the thesis, alongside teaching duties. I am particularly grateful to Mrs Ann Cowie for the efficient and

cheerful manner in which she has typed the successive drafts of the manuscript.

Finally, I owe a large and multi-faceted debt to my husband, Alistair. He acted throughout as a strong emotional support, as well as a constructive critic. He is, in addition, responsible for promoting, over the years, my interest in development economics and monetary history, and their integration with monetary economics.

SUMMARY

The hypothesis investigated is that, where real economic disparities exist between regions or nations, money and financial institutions may on balance tend to increase those disparities (the public sector being a major counteractive force).

Part I lays the groundwork for the development of a theory which supports the hypothesis. Chapter 1 outlines the existing theoretical treatment of money and the distribution of income. The question has been addressed from a variety of standpoints, often indicating support for the hypothesis to some degree, but there is no systematic treatment of the role of money in the context of persisting real disparities in both the regional and international contexts. A strong sense of the real distributional implications of particular financial arrangements, however, emerges from policy discussions in both the regional and international contexts, surveyed in Chapter 2.

In order to build up a general theory of money and distribution on the basis of these various strands of theory and policy, it is necessary to adopt some view of the relationship between money and expenditure on the one hand, and of the development process on the other. The discussion of the monetarist view of money, in Chapter 3, suggests that such an approach would not lend support to the hypothesis, money being viewed essentially as neutral. In contrast, the Keynesian view, also outlined in this chapter, is that money essentially is non-neutral. While this approach is more promising in terms of a basis for the theory to be constructed, the monetarist treatment of the balance of payments is to be borne in mind as highlighting the financial interrelationships between economies.

Without attempting to explain underlying real disparities, Chapter 4 outlines three principles guiding the view to be taken of the development process. First, it is suggested that growth rate disparities should not be viewed as being continually eliminated by some convergence process, although the balance of forces is such that they should not be viewed as implying divergence, either. Second, it is suggested that very similar forces underly regional disparities and international disparities, warranting the development of a general theory referring to both. Third, the importance of the interdependence of economies is emphasised.

In Part II, a theory of the demand for money is developed to apply to a range of economies, in Chapter 5, then a theory of money supply in Chapter 6. Chapter 7 then outlines the adjustment required by these money market conditions.

The demand for money in the long-run, or across economies, expectations being static, is viewed as being dominated by the transactions motive, and thus by the technical structure of commodity and financial markets. At low levels of economic development (for which per capita income is used as a proxy), it is suggested that the income elasticity of demand for money exceeds unity, as the economy diversifies and progressively more transactions are monetised. At higher levels of development, innovations in financial markets result in the more efficient use of the existing money assets and the introduction of substitutes. The income elasticity of demand for money is thus reduced in economies at higher levels of development.

In the short-run, or across economies with expectations allowed to vary, the demand for money will deviate from this trend

due to changes in the speculative demand for money. The 'speculative demand' concept is employed broadly, referring to the expected value of a range of assets, rather than simply short-run interest rates. If the price of domestic assets is expected to rise, then residents' speculative demand for money will fall; they will switch out of money and into the appreciating assets. Further, if domestic assets are expected to appreciate relative to other economies' assets, then both residents and non-residents will switch out of foreign assets and into domestic assets (with consequences for the domestic money supply as foreign exchange reserves rise).

In the long-run, or across economies with expectations static, it is suggested that the income elasticity of supply of money is greater than unity. The financial development which is normally associated with economic development increases the capacity to supply monetary aggregates from a particular monetary base. The elasticity is modified to the extent that monetary growth in one economy 'spreads' to other economies through the balance of payments.

In the short-run, or across economies with expectations allowed to vary, it is suggested that the supply of money (defined either as the monetary base, or as a broader aggregate) increases relative to income when expectations are optimistic, and decreases when they are pessimistic. Capital mobility facilitates the flow of money towards those economies expecting increasing asset prices, and away from those expecting declining asset prices. A model of bank portfolio behaviour, traced through the money multiplier process, illustrates the influence of different configurations of expectations on the distribution of the money supply.

This hypothesis that the demand for and supply of money are influenced independently by actual and expected income levels, raises

a fundamental problem of identification; observed money holdings, relative to actual income, do not allow the identification of either the demand relation or the supply relation. While this problem makes it very difficult to test the hypothesis, nevertheless it does not rule it out as a possible explanation of observed financial behaviour. (Indeed, the hypothesis can be said to accord better with observation of persisting income disparities than the possible alternatives of a fixed demand for money schedule or a fixed supply schedule.)

If, then, the demand for money does rise with a pessimistic shift of expectations (in relative terms) about the local economy and the supply of money falls, there must be excess demand for money. Similarly, an optimistic shift of expectations would tend to produce an excess supply. Unless there is counter-vailing action by the public sector (modifying both the shift in expectations and the shift in the supply of money) income adjustment will ensue, confirming to some degree the initial shift in expectations. The configuration of income adjustment is depicted following on changes in national monetary policy and international provision of liquidity. Finally, Chapter 7 concludes with a multiplier model which combines the money multiplier process and the income supermultiplier, to illustrate the way in which income adjustment may be induced.

Part III is devoted primarily to assessing the theory outlined in earlier chapters against the evidence. The theory built up in Chapters 5-7 rested on a particular view of money in the temporal framework, which was set out in Chapter 3. The temporal evidence for the theory of demand for and supply of money in an economy, in the long-run and in the short-run, is taken from the experience of the U.S. and the U.K., and set out in Chapter 8.

Chapters 9 and 10 then assess the application of this theory in a spatial framework. First, the regional evidence is discussed for Canada and the U.S. Then international evidence is given in Chapter 10 for groups of countries (low-income developing countries, middle-income developing countries, the capital-surplus oil exporters, and the industrialised countries). While there is the problem of identifying demand and supply curves, the evidence is overall consistent with relatively high liquidity preference in lower-income economies and relatively low supply of liquidity (offset somewhat by public sector flows of funds).

Chapter 11 summarises the conclusions reached in earlier chapters, and then proceeds to suggest some further policy conclusions. In particular, it is suggested that transfers of funds (within and between nations) are likely to have real distributional effects which differ from the nominal amounts involved. Further, the implications for the distribution of income should be taken into account when policies promoting capital mobility are proposed. In general, however, the main conclusion reached is that the role of money and financial institutions should be taken into account in any theoretical framework which adequately describes economic disparities between regions and nations.

INTRODUCTION

The world economy is characterised by disparities in real per capita income, ranging from interpersonal disparities to intercontinental disparities. Some economic theory is designed to explain those disparities, while much of economic policy is designed to change them.

Economic explanations for particular distributions of income generally rest on 'real' differences, such as differences in endowment of natural resources, skills and aptitudes, and differences in location. An important institution whose development and use is a direct result of these real factors is money. The purpose here is to consider whether money, once established, takes on an independent role, over and above the underlying real factors, in determining the distribution of income. Such an independent role is likely to arise from the peculiar qualities of money which make an exchange economy behave in a different way from a barter economy. In the Keynesian tradition, that difference extends beyond the productivity difference which is the sole contribution of monetisation in most growth models.

Since differences in financial institutions and conditions between any group of economic agents are derived from real factors, it is not suggested that money in any way supersedes real factors as a determinant of income disparities. Rather, an attempt is made to consider whether money and financial institutions have any feedback effect on these

disparities, either increasing or decreasing them. If such feedbacks exist, then any analysis of regional or international disparities conducted in real terms is incomplete.

The question to be considered is of theoretical significance. In the Keynesian tradition, money is viewed as non-neutral over time, even in the long-run. It is important to consider whether such non-neutrality extends also over space (or other, institutional, cross-sections). A (spatial or sectoral) compositional approach to macroeconomic theory seems to open up promising avenues for future theoretical developments.

Spatial non-neutrality is also of significance at the policy level. On the basis of 'real' explanations of economic disparities (interpersonal, regional, or international), governments often use a redistribution of funds as a measure to reduce disparities. If the financial and real consequences of injections of new money differ by household, by region or by nation, then the real value of the redistribution may no longer be measured by its nominal amount.

Further, there is a tendency, promoted by government action, for financial markets to become more integrated over time. Since the role, if any, of money in promoting economic disparities has generally been viewed as arising from market imperfections (institutional differences), this integration process is seen as allowing money to approximate more closely to neutrality. (This neutrality is in turn generally regarded as desirable because it allows a more efficient allocation of resources.) But if money is spatially non-neutral regardless of 'market

imperfections', integration may simply facilitate (or even exaggerate) the financial flows which contribute to that non-neutrality.

The theory of money's spatial non-neutrality is developed here in an entirely general context, with a view to subsequent application in the contexts of developed country/developing country disparities and of disparities between regions within a country, or country-grouping.

The format of the thesis is as follows. The first chapter, in Part I, puts the thesis into a theoretical context, with a survey of work which has dealt with the distributional effects of money from a variety of theoretical standpoints. Second, the policy context is outlined in Chapter 2. Various policy debates are described which have been concerned with the distributional effects of money. In Chapter 3, the theoretical groundwork is laid for the subsequent development of a particular theory of money and distribution, with a choice of broad monetary theory approach being made. Part I concludes with Chapter 4, which elaborates on the view of real economic relationships which, together with the monetary theory of chapter 3, underlies the later analysis of the distributional implications of financial relationships.

Part II consists of the main theoretical contribution, in the form of an analysis of the factors which determine the demand for and supply of money in different types of economy, and the implications of different financial conditions for output and employment. Chapter 5 outlines a theory of the

demand for money and Chapter 6 a theory of money supply. It is concluded that financial markets may respond to shifts in the demand for money by a shift in supply in the opposite direction. In parallel to the role of money during the business cycle, the role of money among economies is to accommodate expanding economies partially, but to exacerbate the deflation of contracting economies. The mechanism by which this emerges is discussed in Chapter 7. It is suggested that the major stabilizing force is the public sector, both nationally and internationally.

Part III surveys the empirical evidence which supports the hypothesised role of money. First, the discussion of monetary theory in the third chapter led to the choice of a Keynesian framework on which to build a spatial monetary theory. Chapter 8 surveys the temporal evidence, in the form of U.K. and U.S. historical monetary statistics, to support that choice. Chapter 9 then explores the regional evidence for application of this spatial theory within nations; the Canadian provinces and U.S. regions are given particular attention. Chapter 10 then provides similar supporting evidence from the international context, discussing monetary data for country-groupings.

Finally, the concluding chapter summarizes the arguments presented in earlier chapters, and draws some policy conclusions.

PART I

Chapter 1 THEORETICAL CONTEXT

Introduction

This chapter outlines existing theories which suggest that money markets have an effect on the distribution of real income or output additional to any distributional effects of developments in the real sector.

First, distributional effects are discussed in a general context, where there is no explicit reference to distribution of output by region or nation. The theories outlined refer to differential effects of financial developments on holders of portfolios with different compositions. To the extent that there is some regional or national pattern to portfolio composition, the conclusions of these theories may be applied directly to regions and nations.

Second, theories of regional finance are outlined. In general, money is not treated as a constraint on regional output over and above its constraining power at the national level. In other words, if capital is mobile between regions, and interest rate structures do not vary regionally, then an excess demand for credit in one region can be satisfied by excess supply from another. An overall excess demand for credit in all regions, which increases national interest rates, is then generally perceived as having a uniform constraining effect on activity in all regions.

In the field of international finance, increased attention is being paid to capital mobility between nations. By increasing the interest elasticity of the supply of money to a domestic economy, this capital mobility can reduce the constraining power of money

supply on national output. But considerable attention is at the same time focused on those factors which impede the international provision of funds for purposes of expenditure. Just as in the Keynesian model of the domestic economy, money in the international economy may be diverted into idle balances.

Differences in financial structure provide an additional mechanism by which money markets may affect economies' activity differently. The penultimate section of the Chapter outlines theories which suggest that the availability of money can act as a constraint on real output if the financial structure is not fully developed, or if there is government interference in the operations of financial institutions. While most of the analysis in this area refers to national economies, there has been discussion of the role of financial structure in determining regional economic development in the context of countries whose financial system is regionally differentiated, particularly the United States.

Some overall conclusions are highlighted in the concluding section. The discussion in this chapter is by necessity selective. The topic borders on several fields of economics, embodying a vast literature. The selection is intended to highlight alternative approaches to the real distributional effect of money, as well as those ideas, formed in relation to different topics, which may fruitfully be employed in a distributional context.

General Treatment of Money and Distribution

One of the earliest references in monetary theory to the relationship between money and the distribution of income was made

by Cantillon.¹ He suggested that an increase in the supply of money would have a different effect on income and the price level, depending on how the increase was introduced into the economy. Further, relative prices vary depending on how the initial recipients of the injection choose to spend, or hoard, it. The two main mechanisms for such an increase, in the early eighteenth century, were an increased output of domestically-mined specie (the injection then accruing to the mining industry) and a surplus on the balance of payments (the injection accruing to the export sector). The list could now be extended to include government expenditure financed by 'new money' and credit extended by the domestic banking system.

While this 'Cantillon Effect' became embedded in the Classical tradition,² the subsequent development of marginalist theory suggested that relative prices are fully determined by given tastes, factor supplies and production conditions. An injection of money can only change relative prices (and thus the distribution of income) if it accompanies a change in tastes, factor supplies or production conditions; it is this aspect of increased gold production or a balance of payments surplus which changes relative prices, not the money supply change as such. At the theoretical level, then, the money supply was seen as determining the general price level (given a stable velocity of circulation); changes in relative prices were viewed as resulting purely from 'real' phenomena: money was perceived as being 'neutral'. Underlying this theory is an assumption of fully flexible prices and wages which always ensure that markets clear.

Patinkin³ resurrected the question of distribution as being

central to monetary theory when he challenged the theory of the neutrality of money. The primary assertion was that, if all markets are to clear (according to Walras' Law) and if the price level varies in proportion to the money supply (according to the Quantity Theory of Money), then adjustment to an injection of money must involve changing relative prices (rejection of the 'homogeneity postulate'). Archibald and Lipsey's response⁴ regards Patinkin's analysis as applying only in the short-run, as one possible means of depicting the process of adjustment to a new equilibrium where only the general price level has changed. The significance, then, of relative price changes in the short-run (even if not in the long-run) depends on how short the short-run is perceived to be.

But, in addition, Patinkin prefaced⁵ his analysis of the adjustment process by excluding any consideration of injections of money not in proportion to existing money holdings. Referring back to Cantillon, he argued that non-equiproportionate additions to money holdings would not necessarily produce the Quantity Theory of Money result. By implication, not only may injections of money alter the distribution of income and activity in the short-run, but they may also do so in long-run equilibrium.

Most discussion of money and distribution has however taken the form of analysing static welfare gains and losses resulting from developments in financial markets, most notably from market distortions imposed by government.⁶ The distortion to which most attention is given is unanticipated inflation, which causes unexpected changes in the relative real value of assets and in their real rates of return.⁷ Redistribution thus occurs when

asset values and income streams adapt in differing degrees to a change in the general price level, and the inflation is not fully anticipated. The nature of the redistribution depends on the initial array of asset holdings and income contracts.

Even with full anticipation, however, the opportunity cost of holding money increases with inflation. When cash balances are conserved, real resources must be substituted for money, to provide money services.⁸ Even if money is neutral, in the sense that a change in its level of supply does not affect real output, a change in its rate of growth does affect real output if it causes inflation.⁹ (Money is then not 'superneutral'.) The loss of output resulting from conserving cash balances is the converse of the gain derived from saving resources by monetising an economy.¹⁰ The distributional implications of the real loss or gain arising from 'demonetisation' or monetisation are not normally explored.

The static welfare analysis has been extended by analysing the macroeconomic implications of changes in the distribution of net wealth, or 'wealth effects'. It is reasonable to suggest that groups experiencing wealth losses can be expected to react differently to a change in wealth from those experiencing wealth gains, so that the macroeconomic impact of a change in wealth distribution can be expected to vary depending on the particular nature of the distribution.

Attention has however been focused mainly on the different reactions to changes in wealth of the public sector on the one hand and the private sector on the other.¹¹ Metzler,¹² for example, postulated that private sector consumption and demand for money are

positive functions of wealth, while government expenditure is unaffected by wealth. By redistributing wealth from private holders of money balances to the government whose liability they are, inflation thus reduces aggregate demand. In particular, the effects on public and private wealth, and thus the level of activity, of changes in the money supply depend upon how those changes are effected: by open market operations, money-financed tax rebates, changes in banks' reserve requirements, etc.

It seems reasonable to extend Metzler's argument to incorporate different reactions to changes in wealth within the private sector also, so that developments in the financial sector will affect the level and distribution of real output differently, depending on which sectors or regions receive the initial money supply increase, and on how it was effected.

Money in Regional Economics

Where monetary theory has referred explicitly to spatial areas, it has generally fallen into one or other of the categories, regional and international economics, the former applying to regions within a unified currency area and the latter to countries with distinct currencies. What is to be regarded as 'money', therefore, will vary as between the regional and international contexts. A region's money holdings consist of all assets acceptable as means of payment in other regions, plus very close substitutes; they correspond to that region's component of the national domestic money supply. For the nation as a whole, domestic currency is not in general acceptable in international exchange. Rather, in the

international economy, the money supply consists of holdings of convertible foreign exchange, gold, and close substitutes (such as unconditional drawing rights with the International Monetary Fund).

The regional money supply is generally distinguished from the national money supply (in the international context) by a much higher supply elasticity.¹³ Indeed, the elasticity is implicitly regarded as being infinite in the large proportion of regional economics which assumes that no financial constraints apply at the regional level. If this is the case, then money plays no part in the regional distribution of income other than in terms of the welfare gains and losses associated with different portfolios, as outlined in the last section.

The regional finance literature deals with the mechanisms by which the regional money supply is elastic, often using a balance of payments approach. Indeed the high supply elasticity is given as the explanation for the absence of regional balance of payments 'problems'; 'autonomous' capital flows **always** ensure an 'above-the line' zero balance.¹⁴ But, regions do not have balance of payments 'problems' only in the sense that countries did not have such problems before there was official intervention in foreign exchange markets. In such a situation, any tendency towards balance of payments surplus or deficit must of necessity be offset by private sector flows of funds and/or changes in the domestic price level. Without official intervention, indeed, balance of payments problems could be said to be more damaging to the economic stability of the economy involved.

For regions, public sector transfers can play a major part

in reducing the need for 'autonomous', private sector capital flows to maintain balance. If a balance of trade deficit is the result of weak export demand, and thus depressed income, the automatic fiscal stabilisers ensure an increased net government inflow to offset the deficit: total tax revenue falls as income falls, while expenditure on income transfers and social services generally rises as income falls. Indeed a high negative correlation has been observed between flows of Treasury funds and private sector flows of funds between Federal Reserve Districts in the United States.¹⁵ Of course, if expenditure out of receipts from government has a high import content, then the causality may run from public sector inflows to a trade deficit rather than the other way round. Nevertheless, some regional redistribution of income does occur within most countries under regional policy, even if it does not necessarily alleviate balance of payments problems.¹⁶

The public sector influences the regional balance of payments also through the capital account. National capital markets generally rely heavily on the existence of a large stock of government securities, as well as public sector backing of the banking system (through provision of reserves, lender of last resort facility, etc.). A well developed capital market, then, makes available a large stock of what Ingram¹⁷ calls 'generalised claims': widely traded securities, which can earn a return while being readily substituted for money (although with risk of capital loss). Any incipient balance of payments surplus or deficit can be covered by buying or selling those claims. In particular, Ingram suggests, if banks hold these generalised claims, then any loss of bank

reserves resulting from excessive out-payments by its customers can be offset by selling claims in exchange for bank reserves. In this way, the banks can avoid the multiple expansions and contractions which would otherwise result from changes in bank reserves. If banks are branched nationwide, then accounting balances with Head Office perform the function of generalised claims.

But this stabilising role of generalised claims in bank portfolios can only succeed if payments imbalances are temporary.¹⁸ The more important question is how capital flows ensure continuing balance when payments are in 'fundamental disequilibrium', i.e. when there is a change in regional productivity, or a shift in demand for regional products. Both Ingram¹⁹ and Scitovsky²⁰ envisage capital flows offsetting trade imbalance in the long-run as well as the short-run. Taking the example of an increased rate of return on capital in a U.S. region, Ingram suggests that the capital inflow to finance new investment is deposited in local banks (to the extent that it is not directly spent on imported capital goods, raw materials, etc.). The banks then cause an offsetting capital outflow by buying generalised claims with the excess reserves; these claims are then gradually run down as imports rise.

Scitovsky also equates a trade deficit with an excess of investment over saving. This excess demand for loanable funds puts upward pressure on the region's interest rates (where institutionally possible) and downward pressure on the region's security prices. This induces a capital inflow from the rest of the country which, by definition, has a current account surplus

with the region, and excess loanable funds. He concludes:

"In other words, an integrated capital market neither encourages nor discourages investment on a regional basis but merely redistributes savings so as to supplement one region's insufficient savings by transferring into it another region's excess savings." ²¹

The existence of a highly integrated capital market is necessary to effect the capital flows. (Otherwise, the resulting balance of payments deficit will require income adjustment triggered, according to Scitovsky, ²² by the increase in interest rates.)

But, whereas Scitovsky and Ingram had considered only a capital account disturbance being offset by a current account response, a fundamental disequilibrium may emerge as a result of a current account disturbance exacerbated by a capital account response. The argument, raised by Pfister ²³ and elaborated by Whitman, ²⁴ suggests that a drop in a region's export demand, for example, would reduce the value of the marginal product of the region's capital (the region's MEC), thus prompting long-term capital outflows to compound the drop in export receipts. If labour is highly mobile however and/or the marginal propensity to import very high, import payments may drop by more than export receipts, so that the current account could be in surplus. This surplus would be increased by the income-related increase in central government expenditures and reduction in revenues, as discussed for example by Kaldor. ²⁵ The surplus would be even greater if the fall in demand for the region's output were internally generated, i.e. the result of a regional recession, with no effect on export receipts.

In general, therefore, long-term capital will tend to flow out

of stagnating regions and into expanding regions. These flows may or may not be stabilising since either region's current account could be in surplus or in deficit. For the same reason, since net government transfers tend to flow into recessionary regions and out of expansionary regions, they also may or may not be stabilising, with respect to the current account; they can, however, be expected to offset private sector long-term capital flows.

Short-term capital, in the form of trade-credit, intra-firm transactions and bank transactions in generalised claims, as in the Ingram model, would tend to accommodate, or finance, the net trade balance for some time. But whether a net outflow of bank reserves would eventually be required depends on the juxtaposition of long-term capital account and net public sector transfers, as well as the persistence of the trade imbalance. In the event of an outflow of a region's banks' reserves, when either the stock of generalised claims of unit banks or the willingness of branch banks' head offices to supply credit in the region is eroded, a downward real income adjustment will be necessary.

Even in this more 'Keynesian' setting, however, money does not play an independent role, other than allowing the postponement of adjustment. The source of disequilibrium is entirely 'real', arising from changes in demand: investment, consumption and government, both domestic to the region and generated outside the region. The question at issue in Whitman's analysis is whether overall changes in all components will balance out, or whether there will be a net change in demand, causing both a money supply change and an income adjustment.

Capital flows have been described so far as responding to national rates of return on generalised claims, or expected real rates of return on capital in different regions. The implication has been that a nationwide increase in liquidity preference would have a uniform effect on financial rates of return, with no particular implications for regions. But suppose liquidity preference differs by region, so that a region with weak export demand has high liquidity preference, say, relative to the rest of the country. This preference will be reflected in a high proportion of idle balances being held by households and financial institutions in the region, so that there is little money in the regional economy made available for long-term investment by local businesses. The implications of this 'speculative' demand, differentiated by region, for the regional money supply will be worked out in later chapters.

While Whitman is circumspect about categorising regions in terms of their relative growth and balance of payments positions,²⁶ other analysts of long-term regional disequilibrium patterns, such as Myrdal, Hirschman and Kaldor,²⁷ concentrate on a more polarised centre-periphery model. According to their divergent-growth theories, capital tends to flow from peripheral regions to central regions, while the former have a tendency to current account deficit because of weakening export demand. Again, however, the analysis is generally conducted in real terms. Kaldor,²⁸ for example, talks about the availability of savings, not of money.

The financial sector does however play some independent role in Myrdal's original work.²⁹ Kaldor's translation of Myrdal's theory

expresses the advantage enjoyed by the Central region as the result of economies of scale. In terms of the financial sector, then, capital is attracted to Centre because of economies of scale not only in the goods-producing sector but also in the financial sector. Rates of return in the central region are thus increased by a purely financial component.

Regional differences in financial efficiency have been noted by others, although there is a difference of opinion as to their real impact. Morgan,³⁰ for example, like Myrdal, views the outflow of capital from peripheral regions as a one-way process, contributing to divergent growth trends. Kindleberger,³¹ on the other hand, implies that the increase in efficiency associated with the centralisation of finance is universally shared; the regional allocation of finance is not affected, while its overall efficiency is increased.

In general, therefore, the regional finance literature does not give money any independent role in determining the level of regional output; only Myrdal's theory provides a starting point, in suggesting that financial efficiency may differ regionally. The possibility that regional liquidity preference might differ is not raised. But since the regional money supply is usually regarded as being highly elastic, demand differences would not be of any significance. Money is generally seen as affecting all regions' output only in the sense that increasing efficiency in financial markets allows regions to economise on cash balances and at the same time avoid income adjustment to temporary payments disequilibria.

Money in International Economics

Money enjoys a much higher profile in international economics than in regional economics. The relative size of each country's stock of international money, or reserve holdings, is quantified and highly publicised (unlike most regional money supplies), while any undue shortfall in this stock is the trigger for a foreign exchange crisis. Further, the possibility that reserves demand might differ from country to country is explicit in the theoretical literature, and the elasticity of the supply of reserves is widely discussed.³² The Keynesian international economics literature ascribes to reserve holdings the equivalent role to that of domestic money in the domestic economy, as a potential constraint on real output.³³ The attributes of low substitutability of other assets for money and the low elasticity of its supply (being a function, generally, of export demand) are common to much of both the domestic and international Keynesian monetary theory.

The traditional (post-World War II) theory of the demand for reserves, however, used the concept of transactions demand in a manner very similar to classical theory of the demand for domestic money. Triffin,³⁴ for example, expressed the demand for reserves as a proportion of the value of imports, on the grounds that the amount of central monetary authority financing out of reserves would tend to be below some proportion of total import payments. That this viewpoint persists is evidenced by the fact that International Monetary Fund (I.M.F.) quotas and Special Drawing Right (S.D.R.) allocations are still based on a formula incorporating each country's total trade value.

Reserves were thus viewed as a means of facilitating international transactions in goods and services, i.e. as a means of minimising the costs of exchange. As a corollary, the inadequacy of reserve levels was measured in terms of the degree to which trade is inhibited by excessive transactions costs incurred by economising on foreign exchange.³⁵ Implicit was the notion that a proportionate increase in reserves would confer proportionate benefits in terms of reduced exchange costs.

Exchange costs may also be reduced by altering the costs associated with existing reserve totals, in particular by replacing gold by foreign exchange or S.D.R. This provides a direct counterpart in modern times to the Johnson discussion³⁶ of the social benefits conferred by replacing domestic commodity money by paper money. Much of the distributional content of the international financial literature refers to the distribution of these benefits, as well as of the seignorage accruing to the I.M.F.³⁷ The social saving and seignorage are treated as fixed absolute amounts, whose distribution is treated as a question of equity rather than efficiency.³⁸ Some doubt has been thrown on the significance of seignorage at the international and domestic levels. Johnson and Klein³⁹ argue that a commodity can be treated as money only if its issuer inspires confidence which involves the issuer in costs. The counterpart of seignorage is thus the 'goodwill' capital built up by national governments and international institutions.

Even if this is true, however, real social saving arises from each successive financial innovation, which allows a reduction in exchange costs. The continual emergence of the benefits of such

saving poses questions of distribution in the same, static, sense as the seignorage debates, as well as in the dynamic sense of differential productivity increases insofar as the innovations are not available at the same time to all countries.

The concept of social saving with respect to exchange costs is not directly applicable to reserve holdings, as to domestic money holdings, if some are held for other than transactions purposes. On the surface, it would appear that Keynes himself had adopted the transactions approach in the international context. The U.K. proposal in 1944⁴⁰ for an International Clearing Union, designed by Keynes, suggests that member quotas should be 75% of a three-year average of import levels, implying an assessment of reserve requirements to satisfy transactions demand only. The contrast with Keynes' liquidity preference theory for the domestic economy is striking; in the General Theory, Keynes had stressed the significance of speculative demand in inhibiting the employment of cash balances for increasing activity.

The difference lies, however, in Keynes' perception that individual countries' foreign exchange transactions could be regulated in a way which domestic money transactions may not. In particular, he saw the Clearing Union as an opportunity to free the international economy of the speculative forces which so constrained the domestic economy. The U.K. proposal thus included provisions to control short-term capital movements;⁴¹ by eliminating by regulation the need for speculative balances, the demand for reserves would conform to the traditional concept of transactions balances. In the absence in practice of such regulation, a Keynesian reserves

demand theory must incorporate the fact that speculative foreign exchange transactions do occur and that the demand for reserves includes a 'speculative', or asset demand, component.

Along with the notion of private sector asset demand for foreign exchange, the notion was gradually developed that central monetary authorities might have an asset demand for reserves. Some interest rate measures were included in demand functions to reflect the opportunity cost of holding reserves, as well as the propensity to import as a measure of transactions needs. The need for reserves to finance short-term capital movements is incorporated by including some measure of reserves variability. Kenen and Yudin⁴² and Clark,⁴³ for example, use the variance of the disturbance term in their demand for reserves functions as a proxy for the variability of reserves resulting from speculative capital movements. No one theory has fully explained the nature of speculative movements for predictive purposes.⁴⁴ However, the argument is made that central monetary authorities must base their reserves targets on past reserves experience, so that this is the correct independent variable.

The motivation for holding reserves at all in an optimising context is the avoidance (or postponement) of costly adjustment to payments imbalance.⁴⁵ As such, official reserves perform the same function as regional holdings of 'generalised claims', in cushioning the impact of short-run payments fluctuations. Some have argued that this motivation is a precautionary rather than transactions demand,⁴⁶ since the central monetary authority can only respond to the independent actions of the private sector. To the extent that

the proportion of incomings and outgoings of foreign exchange which is unforeseen is higher than that of individuals' and businesses' incomes and outlays in domestic currency, then there will indeed be a higher precautionary element to reserves demand.

In theory, reserves are only necessary if exchange rates are fixed (over and above those balances necessary to stabilise the rates within fixed bounds). Any temporary, or long-term, imbalance in the foreign exchange market would otherwise be eliminated by exchange rate changes, rather than a change in reserves. But since the move to greater exchange rate flexibility in early 1972, countries with floating exchange rates have continued to hold reserves according to a stable function. There was a shift of that function to lower levels for developed countries, but to higher levels for non-oil producing developing countries, financed by expansion of the Euro-dollar market.⁴⁷ The general consensus is that intervention, with the use of reserves, is still employed in order to stabilise floating rates. Temporary imbalances would otherwise cause exchange rate movements, enforcing some adjustment particularly in export sectors. Sufficient balances are thus maintained to prevent 'unnecessary' short-run adjustments which then have to be reversed. Lower balances are required than in the fixed rate situation, where reserves may be employed in cases where long-run adjustment is necessary. (Higher balances may be required, on the other hand, where the move to exchange rate flexibility was accompanied by increased instability of transactions, as appears to have been the case for the non-OPEC developing countries.) But, short-run and long-run adjustment requirements are not easily distinguishable

when they first emerge, and the difference is one of degree rather than of kind. The reserve requirements of fixed and floating exchange rate regimes may thus be regarded as differing also in degree rather than in kind.

Given the available theories on the demand for reserves,⁴⁸ the discussions of spatial differences in demand will now be investigated. The discussions fall into three general categories: first, those which view all countries' reserve demand functions as being of similar structure, with differences in the levels of the independent variables explaining differences in reserve levels, second, those which allow coefficients as well as variables to differ, and third, those which envisage structural differences in reserves demand.

In the first category are the transactions demand theories which explain reserve differences entirely in terms of differences in marginal propensity to import (or import levels). A variant of this approach applies the Baumol economies of scale argument to the demand for reserves, suggesting an income or import elasticity of demand for reserves less than unity and the same for all countries.⁴⁹ As long as additions to reserves were distributed in proportion to actual reserve holdings, according to this view, no real income transfer would occur.

In the last ten years, in response to changing political circumstances, much has been written about the liquidity needs of the developing countries compared with the developed countries, based on the second type of hypothesis, that the coefficients of demand for reserves functions might differ between the two groups of countries.⁵⁰ Many of the early optimising models⁵¹ were disaggregated into two groups of country by per capita income level; the results did not

support the suggestion that the coefficients differed systematically as between the two groups. Differences in cost of adjustment, return on reserves, opportunity cost of holding reserves, etc., were hypothesised. More recent specifications have suggested that systematic differences do exist. For example, Frenkel⁵² concludes that economies of scale are a significant factor for developed countries, but not for developing countries. His explanation relates to differences in financial structure: the greater ability of developed countries to increase the import velocity of reserves, their greater ability to monetise reserves to satisfy domestic asset demand, and their greater ability to augment reserves with credit.

Now that asset demand for reserves is posited in these demand functions, the distributional impact of distributions of additions to reserves becomes more complex. The current method of distribution in proportion to existing holdings would, according to Frenkel's conclusion, have a relatively greater expansionary effect dollar for dollar in developed than in developing countries. Overall the relative expansionary effect would depend on how far actual reserve holdings reflect desired reserve holdings, and whether desired holdings are relatively higher in developed or developing countries. While the fact that actual and desired holdings are unlikely to coincide has been recognised, the only attempts to measure a distinct desired holdings level have had to assume that countries are always on a path adjusting towards the desired level.⁵³ If they are not, then desired holdings are very difficult to identify.

Frenkel's third explanation above for the economies of scale

difference between developed and developing countries suggests the third view, that there is a complete structural difference in reserves demand. If in fact developed countries can freely augment reserves with unconditional credit (through swap arrangements, etc.) then the level of reserves no longer acts as a constraint in the same way as it does for countries without such facilities. In Keynesian terms, the degree of substitutability of other assets for international reserves is high. Changes in their level may have little real effect. The various lending facilities of the I.M.F., with their differing associated degrees of conditionality do, of course, provide a means for developing countries to augment their reserves. The introduction of new facilities (relating to export shortfalls, buffer stock financing, and oil-related deficits) designed primarily for developing countries, demonstrates that access to funds (relative to need) was judged to be inadequate for those countries. But to the extent that developing country access to credit is less than that of developed countries, the degree of substitutability of international reserves for alternative sources of international liquidity will be lower, and the constraining power of those reserves greater.

Finally, a further argument that structural differences exist compares the reserves demand for the U.S. relative to European countries. Despres, Kindleberger and Salant⁵⁴ have applied intermediation theory to the international setting in order to counter the arguments that the U.S. is 'exploiting' its position as reserve-currency country. They suggest that the U.S. has a lower liquidity preference than Europe. Acting as a 'banker' the U.S. satisfies

European liquidity preference, as well as its own, by lending long and borrowing short.

Liquidity preference differences are only of significance with respect to the constraining power of money if the money supply is not infinitely elastic. According to the monetary approach to the balance of payments, any increase in the demand for money can be satisfied, with a minimal increase in domestic interest rates, by capital inflows (if exchange rates are anything but fully flexible).⁵⁵

The balance of payments is viewed as essentially a 'monetary phenomenon',⁵⁶ a deficit reflecting an excess supply of money and a surplus an excess demand. In other words, transactions with other countries allow the demand for money, whatever it is, to be met. If exchange rates are fixed, for example, an excess demand for money puts upward pressure on interest rates. Capital inflows are thus attracted to meet the demand. No change in the domestic price level has been required, or indeed is possible if the market in tradeable commodities is large and competitive, and dominates domestic price levels. If exchange rates are flexible, an excess demand for money may exert some downward pressure on the domestic price level, with a compensating exchange rate appreciation to ensure uniformity of international tradeable prices. This adjustment will be reinforced by capital inflows in anticipation of the exchange rate appreciation. The speed with which an excess or deficient domestic demand for money is met is a positive function of each of the following:

- (i) the degree of international capital mobility;
- (ii) the size and competitiveness of the international

- tradeables market;
- (iii) the degree to which the central monetary authority may not sterilise international capital flows;
 - (iv) in the case of floating exchange rates, the flexibility of the domestic price level, and the absence of a real wage ratchet.

The fixed exchange rate case is analogous to the case of subnational units, which in turn has been likened to the experience of countries in the period of the international gold standard.⁵⁷ The price-specie-flow mechanism, by which the gold standard was traditionally seen as operating, relied on changes in domestic price levels to be caused by gold movements; through their effect on the trade account these changes would stem the gold movements, returning international payments to equilibrium. More recent interpretations of the operation of the gold standard in the nineteenth century⁵⁸ attribute the smooth working of the system to equilibrating capital movements. The large stock of 'generalised claims', issued in London, allowed capital flows to meet temporary deficiencies or excesses in domestic money stocks without the necessity of domestic deflation or inflation, in exactly the same way as described by the modern monetary theory of the balance of payments.

In such a context, the demand for reserves is a residual, depending on the domestic supply of money relative to demand. The central monetary authority will however require to hold reserves to meet any reduction in the domestic demand for money until payments are brought back to equilibrium. The choice is now available,

following the 1978 Amendments to the I.M.F. Articles of Agreement, of allowing exchange rates to float freely, obviating the need for reserves. Grubel, from the point of view of the monetary theory of the balance of payments, suggests however that exchange stabilisation (and thus reserve holding) creates 'positive externalities',⁵⁹ the only rationale for holding reserves which he accepts as legitimate.

Implicit throughout is the notion that money is held as a financial asset in order to reduce exchange costs, where 'exchange costs' is interpreted broadly to include the avoidance of real adjustment to temporary mismatching of foreign exchange receipts and expenditures. But the perceived high elasticity of money supply within the international financial system removes any distributional element (other than in the short-run). Frenkel and Johnson, in demonstrating the historical continuity of thought on the monetary theory of the balance of payments, quote Mill as follows:

'A newly acquired stock of money would diffuse itself over all countries until money has diffused itself so equally that prices had risen in the same ratio in all countries, so that the alteration of price would be for all practical purposes ineffective.'⁶⁰

Indeed, the world money supply is treated as a homogeneous whole for the purposes of explaining world inflation in the same way as the domestic money supply is used to explain domestic inflation.⁶¹

The possibility of distributional effects has not been entirely neglected. Mundell, for example, considers the case of a two-country system where one country is fast-growing relative to the other, and thus, according to Mundell, has a relatively high demand for money.⁶² With a given stock of money between the two

countries, equilibrium is maintained by deflation in both countries, associated with the trade surplus in the fast-growing country, which is the sign of excess demand for money. Mundell concludes that the world price level is determined by the sum of all national demands for money (regardless of their composition) relative to total supply. The demand for real balances in each economy is satisfied by flows between those with excess demand and those with excess supply, together with adjustments in the general price level; the mechanism exactly mirrors that of a domestic economy as depicted by the monetarist model. Similarly, the analysis relies on the strong assumptions of stable demand for money functions and fully flexible prices.

Indeed, since the neutrality of international money in monetarist theory is based on particularly strong assumptions, some clues are provided as to potential sources of non-neutrality, at least in the short-run. Thus, referring to the four conditions listed above (pp 26-27) for the speedy satisfaction of money demand, it seems reasonable to conclude that the degree of elasticity of the money supply will vary from country to country according to differences in these factors. An increase in the demand for money may go unsatisfied, and activity frustrated, for some time in a country with imperfect access to world capital markets, for example.

Indeed, Triffin,⁶³ has postulated a distinct distributional pattern during the operation of the gold standard, suggesting that international money did not act as an effective constraint on developed countries as it did on developing countries. Because of greater access to capital markets, the developed countries could

effect payments adjustment by induced capital flows. The developing countries, on the other hand, had to rely to a greater extent on price flexibility. Developing countries relied heavily on primary commodity exports while the developed countries specialised in manufactured goods (i.e. the tradeable market was not uniform as between the two groups of countries). Thus, price flexibility among the former but not the latter produced relative price changes and thus relative real income changes.⁶⁴

The nature and degree of capital mobility is central to the nature and degree of elasticity of the money supply. Certainly the monetarist result of a particularly high elasticity of supply still holds in the long run with imperfect capital mobility, but the adjustment process is likely to take longer than with perfect mobility. The scope for a real distributional impact in the short-run, if not in the long-run, is thereby increased.

Much has been written in recent years on capital mobility and the integration of capital markets which encourages capital mobility. The mobility of capital within an area is one of the criteria⁶⁵ suggested for delineating an optimum currency area. But, as in the regional finance literature, concern has been expressed that mobile capital may not in fact promote balance of payments adjustment; capital flows could exacerbate trade imbalance.⁶⁶

The context of enquiry is most frequently the question of the feasibility of independent national monetary policies in developed countries when capital is mobile. The area is, however, fraught with difficulty, not least because of the variety of possible interpretations of the concepts involved. Kenen, for example, in one

of the several reviews of the literature,⁶⁷ rejects as proxies for capital market integration uniform security prices, the degree of substitutability between financial assets and the transferability of assets. Rather he suggests the criterion of the degree to which participants in the market are "enabled and obliged" to take notice of events occurring in other markets. Empirical testing of any of those criteria presents further problems, explored in detail by Leamer and Stern.⁶⁸ A major empirical problem relates to interest rate differentials; since no independent measure exists of transactions costs and perception of risk, then if interest rate differentials are used as a proxy, uniformity of net interest rates exists by definition.

The most recent survey of empirical material, by Aliber,⁶⁹ attempts to provide a consensus view of the degree of integration of capital markets: that markets are not fully integrated, nor are they fully segmented. In other words, there is scope for independent monetary policy in the short-run. No general conclusions emerge, however, as to the relative degree of capital mobility between different pairs of countries.

The participation of developing countries in international capital transactions is a relatively recent phenomenon, not yet fully reflected in the capital market integration literature. The increase in developing country participation since the late 1960s and particularly since 1974, has however spawned empirical work on the nature of that participation.⁷⁰ The marked increase in the scale of developing country borrowing and lending in developed country markets may suggest an increase in capital mobility such that domestic activity is less constrained by the domestic money supply.

The developing country literature however concentrates on domestic financial structure as the key factor determining the supply of funds in domestic, rather than developed country, financial markets. This contrasts with the international capital mobility literature which presumes perfect mobility within nations. In the next section this alternative, institutional, approach to the differential role of money as between regions and nations will be examined.

Financial Structure

Non-Keynesian pure monetary theory has as a fundamental result that money is neutral at the sub-national level as long as factor and product prices are fully flexible. It is also neutral at the international level with caveats relating to factors such as imperfect mobility of capital which result primarily from national government efforts to segment the international capital market. This consideration of institutional sources of non-neutrality is the basis of studies of the real impact of financial structure, both at the regional and national levels.

The level of development (or underdevelopment) of financial structures is seen as a potential constraint on real output in two ways. First, the stock of money and the proportion made available to finance expenditure is limited by the level of development of the banking sector. Second, the rate of flow of savings resulting from expenditure will tend to be higher, the greater the return on financial assets.

The first major international study of financial structure was

conducted by Goldsmith,⁷¹ who concentrated on the latter constraint. In order to compare the degree of financial intermediation of individual countries over time and of different countries at different stages of economic development, Goldsmith constructed for each a Financial Interrelations Ratio (F.I.R.). The F.I.R. measures the size of the financial superstructure (the total value of financial assets) relative to the stock of real wealth. He concludes that income levels (or levels of economic development) are positively related to the levels of F.I.R. He remains agnostic, however, as to the direction of causality as between growth and savings.

McKinnon and Shaw,⁷² adopt an explicit loanable funds approach, whereby economic development is determined by investment, which in turn is constrained by the amount of loanable funds at prevailing interest rates. 'Financial liberalization' would promote increased intermediation, or 'financial deepening', and thereby increase the supply of loanable funds on the domestic market, and thus real output. Employing Fisher's analysis of real and nominal interest rates,⁷³ they argue that real interest rates are often held below the equilibrium level by inflation and by the extension of bank and government subsidised lending to low-return projects in the urban centres, i.e. by what McKinnon and Shaw term 'financial repression'. Their prescription is the reverse of the Keynesian prescription for a liquidity trap: real interest rates should be maintained at high levels, on the grounds that higher interest rates increase savings, reduce liquidity preference and preclude investment in low-return projects.⁷⁴

McKinnon and Shaw tend to treat the flow supplies of money and saving as playing an equivalent role in financing investment expenditure. McKinnon concentrates on financial systems whose primary savings instruments are provided by the banking system, so that the stock of money, by broad definitions, is a major proportion of financial assets. Shaw puts more emphasis on bond markets, advocating high real interest rates on bonds, rather than on bank deposits.

For countries with low levels of financial development, it is understandable that 'speculative' liquidity preference should not be highlighted, as it was not in monetary theories developed in European countries at early stages of financial development. Where there is not a wide range of financial instruments and where a high proportion of investment is self-financed, or directly financed, the supply of savings other than in the form of currency will tend to be made available for investment.

But once financial systems develop, with a wide variety of financial instruments, saving decisions become more and more divorced from investment decisions. Investment expenditure increases incomes, which then increases savings. But the problem lies in ensuring that investors have money made available in the first place, at rates lower than or equal to the expected rate of return on investment. Interest rates may be forced up by preferences among wealth holders to hold their assets in liquid form. This problem is particularly acute for small, open economies with undeveloped domestic financial systems, but access to sophisticated foreign financial markets. Even if speculative money holdings would not have arisen in the domestic financial markets, they are encouraged

and facilitated by the high financial returns and convenient terms offered in foreign markets, relative to domestic markets. Domestic entrepreneurs must then attempt to penetrate foreign markets, paying high returns, in order to access these domestic money holdings.

McKinnon and Shaw's proposal for high real domestic interest rates, then, would certainly discourage the outflow of money (and foreign exchange) to foreign financial markets. As well as increasing, thus, the monetary base, a high interest rate policy would also encourage a higher proportion of less liquid assets in portfolios (e.g. time deposits relative to demand deposits), thereby increasing the long-run value of the money multiplier.

The benefits of high interest rates, as far as borrowers are concerned, is more debatable, particularly with respect to the rural areas with unorganised money markets. A growing literature⁷⁵ has documented the 'usurious' nature of interest charges in such areas, which are the result partly of the local monopoly control by money-lenders which is the common situation of suppliers in any rural area. The market is clearly segmented, since there is no reason on grounds of relative interest rates why funds could not have been borrowed elsewhere at low rates to be lent out in rural areas at high rates. Other factors also contribute to high rural lending rates, particularly the relative illiquidity of collateral in rural areas,⁷⁶ as well as the higher costs of lending in unorganised markets.⁷⁷

Thus, even if higher interest rates did allow an increase in the multiplied money base, it is not at all obvious that lending

would be increased in the rural areas (particularly if lending rates increased further). Rather, self-financing by building up relatively liquid deposit balances, might become even more prevalent, thus increasing the desired liquidity of the asset structure in those areas.

McKinnon, who deals particularly with the dual nature of developing economies, suggests that development disparities between the export enclave and the rural sector are the result of market imperfections which disturb relative prices. Both McKinnon and Shaw stress the 'repressive' role of inflationary government finance, which holds down real rates of return on financial assets and misallocates resources between the public and private sectors. The underlying theory is that untrammelled market forces would not only reduce real income disparities between the rural sector and the export enclave within developing countries, but also reduce those between developing and developed countries. In Part II, we shall assess this proposition, paying particular attention to the role played by financial relationships between economies.

McKinnon and Shaw have raised fundamental issues in terms of the different determinants of money demand and supply in economies at different levels of development. In particular they demonstrate that the supply elasticity of money is a function of financial structure: the greater the extent of intermediation, the greater the scope for demand for money to be met, or in other words, the greater the money multiplier. Financial structure in turn is determined by the level of development and the associated money market conditions. The presence of inflation however provides

an inadequate explanation of undeveloped financial structure. In particular, the results of increased intermediation are an increased reserves base for the banks because of lower leakages abroad and into domestically held currency, and an increased multiplier of that base through the growth of non-bank financial intermediation, in short an increased money supply. Unless investment demand grows at the same pace, the end result will be banking-induced inflation replacing government-induced inflation.

In part II the significance of financial structure for money demand and for money supply response will be drawn out in greater generality than the McKinnon-Shaw developing-country, inflationary finance hypothesis. Spatial differences in financial structure occur in some degree within countries at all stages of development as well as between them, quite apart from relative price trends.

The role of financial structure in economic development patterns within developed countries has been considered rarely, with the few relevant studies referring to the U.S. economy, primarily because of the diversity of financial structure within the U.S., and the ability to identify the District in which the first-round impact of monetary policy is felt.

In particular, reserve ratios have in the past varied between different types of deposit, between members of the Federal Reserve System and non-members, and between non-members in different States.⁷⁸ Tsiang⁷⁹ investigates the implications of the composition of the banking system and its liabilities for the money multiplier. Since the composition coefficients are fixed in his analysis, Tsiang concludes that the national money multiplier is unaffected no matter where

in the system an increase in high-powered money is injected. Miller⁸⁰ applies multiplier differences explicitly to the regional framework and allows different regional behavioural responses to changes in the national interest rate and price level. In the context of his comparative-static framework (with full employment in both regions), the overall result of monetary policy becomes uncertain, and because of variable multipliers, may be dynamically unstable. Money in Miller's framework thus becomes non-neutral at the regional level and also at the national level.

The possibility of different regional money multipliers resulting from regional differences in the demand for money will be pursued in Part II. Miller, however, has excluded the implications of relative income changes; the emphasis here will be on actual and expected income levels. Further, the responses of profit-maximising banks to differences in regional multipliers will be considered.

Studies of the U.S. regions also emphasise regional differences in banking structure and their effect on lending practices. Minsky⁸¹ stresses the significance of the way the allocation of bank lending is determined for the pattern and strength of regional economic development. While the institutional banking literature supports such a view, the empirical literature is at best inconclusive. (Relationships between banking structure and development are in any case difficult to identify when the differences in banking structure are not sharply defined and when there are marked differences within each region.) Thus, while interest rate differentials exist between Districts, there is debate as to whether

these result from regional demand-and-supply differences⁸² or from regional differences in the competitive structure of the banking system.⁸³ Dreesse⁸⁴ attempted to establish the significance of regional differences in banking practice and personnel. While he concluded that these did not appear to bear much influence on regional growth differences, this conclusion arose from the overwhelming correlation between employment growth, deposit growth, loan growth and loan:deposit ratios. The significance thus resides with the banking process rather than individual bankers.⁸⁵

It is, however, interesting to note that, while the international financial structure literature implies that rigidities in the banking system, by inhibiting market forces, also inhibit economic development, the regional literature provides counter-arguments in favour of market segmentation. The case for segmentation at both the regional and international levels is pursued in Part II.

Conclusion

While monetary theory in general has always acknowledged that developments in financial markets may have consequences for the distribution of income, these consequences have only rarely been pursued. Where they have been pursued, the analysis has concentrated more on static welfare gains and losses than on the dynamic implications for the growth or decline of particular sectors or areas.

In the regional context, where the distributional implications of national developments are of more direct significance, the analysis has tended to be conducted in real terms. This derives

from the general understanding that the supply elasticity of money, for any one region, is so high as to exclude any particular constraint arising from shortage of funds.

The supply of money to different economies is highlighted much more in the international finance literature. The flow supply of foreign exchange, as measured by the balance of payments, is seen as posing an effective constraint on expenditure (in the absence of fully flexible exchange rates). But the increasing international mobility of capital, as national financial markets become more integrated with each other, is increasing the elasticity of supply of money for each country. Indeed, such a development is often welcomed as a means of removing the balance of payments constraint in the same way as it appears to have been removed for regions.

It is necessary, then, in investigating the responsiveness of money supply to changes in demand, to consider the determinants of capital flows, and how the elasticity of supply of money might vary from one economy to another (in both the regional and international contexts). Differences in financial structure may be expected to play a part in determining the pattern of capital flows, since they imply differences in financial returns. These differences in financial structure, also, may be expected to persist if financial markets have the tendency to concentration suggested by Myrdal.

First, however, in Chapter 2, the relevance of the distributional effects of money for policy questions is illustrated with reference to the International Monetary Fund, the European Economic Community and regional banking policy.

Footnotes

1. R Cantillon, Essai sur la Nature du Commerce en Général, ed. and tr. by H Higgs (London: Macmillan for the Royal Economic Society, 1931), pp.15-81.
2. The term 'Cantillon Effect' was coined by M Blaug, Economic Theory in Retrospect, third edition (Cambridge: Cambridge University Press, 1978) p.21, where he also discusses its role in Classical Theory.
3. D Patinkin, Money, Interest and Prices: An Integration of Money and Value Theory, second edition (London: Harper and Row, 1966).
4. G C Archibald and R G Lipsey, 'Monetary and Value Theory: A Critique of Lange and Patinkin', Review of Economic Studies, Vol. 26 (Oct. 1958), pp.1-22.
5. Op.cit., p.33
6. An interesting collection of material on the implicit transfers effected through the financial system is provided in K E Boulding and T F Wilson (eds.), Redistribution Through the Financial System: The Grants Economics of Money and Credit (New York: Praeger, 1978).
7. This observation has featured also in the Classical literature. For example, Sayers discusses Ricardo's concerns with the redistributive effects of inflation (together with its long-run neutrality) in R S Sayers 'Ricardo's Views on Monetary Questions', Quarterly Journal of Economics, Vol. 67 (Feb. 1953), pp.30-49. For a survey of the more recent literature, see John Foster, 'The Redistributive Effects of Inflation - Questions and Answers', Scottish Journal of Political Economy, Vol. 23 (Feb. 1976), pp.73-98.
8. An early version of this analysis is to be found in M J Bailey, 'The Welfare Cost of Inflationary Finance', Journal of Political Economy, Vol. 64 (April 1956), pp.93-110.

9. This point has been debated in the growth literature, see for example, J Tobin, 'Money and Economic Growth', Econometrica, Vol. 33 (Oct. 1965), pp.671-684 and D Levhari and D Patinkin, 'The Role of Money in a Simple Growth Model', American Economic Review, Vol. 58 (Sept. 1968), pp.713-753.
10. See H G Johnson, 'Inside Money, Outside Money, Income, Wealth and Welfare in Monetary Theory', Journal of Money, Credit and Banking, Vol. 1 (Feb. 1969), pp.30-45, for an analysis of the non-neutrality of the replacement of a commodity money by paper money, with money treated as both a consumer and a producer good.
11. See Bailey, op.cit.
12. L A Metzler, 'Wealth, Saving and the Rate of Interest', Journal of Political Economy, Vol. 59 (April 1951), pp.93-116.
13. The elasticity of supply of money at the international level is discussed in the next section.
14. Conventionally, those capital flows undertaken by the government purely to offset imbalance in the demand for foreign exchange are defined as 'accommodating', and cause a change in official reserves holdings. All other capital flows, occurring without reference to the balance of payments position as such, are 'autonomous' with respect to the balance of payments. Since the balance of regional payments is not even measured in most countries, then capital flows must in general be autonomous, even if they have to be induced, by market forces, to make up any shortfall.
15. See, for example, Penelope Hartland, 'Interregional Payments Compared with International Payments', Quarterly Journal of Economics,

Vol. 63 (Aug. 1949), pp.392-407 and N N Bowsher, J D Daane and R Einzig, 'The Flows of Funds between Regions of the United States', Journal of Finance, Vol. 13 (March 1958), pp.1-20.

16. See C P Kindleberger, International Economics, second edition (Homewood, Ill.: Richard D Irwin, 1958), pp.577, where he contrasts regions and nations by suggesting that transactions between nations are dominated by efficiency considerations, while interregional transactions are modified by equity considerations. The argument was modified in the third edition (1963, p.622) to acknowledge that equity played some role in international transactions. The entire discussion was dropped in the fourth edition (1968).
17. J C Ingram , 'State and Regional Payments Mechanisms', Quarterly Journal of Economics, Vol. 73 (Nov. 1959), pp.619-632.
18. Pfister made this point in response to Ingram's 1959 article. See R L Pfister, 'State and Regional Payments Mechanisms: A Comment', Quarterly Journal of Economics, Vol. 74 (Nov. 1960), pp.641-648.
19. Op.cit.
20. See T Scitovsky, 'The Theory of the Balance of Payments and the Problem of a Common European Currency', Kyklos, Vol. 10 (1957), pp.18-44 and Economic Theory of Western European Integration (London: George Allen & Unwin, 1958).
21. T Scitovsky (1957), op.cit., p.27.
22. Ibid., p.29.
23. Op.cit.

24. Marina von N Whitman, International and Interregional Payments Adjustment: A Synthetic View, Princeton Studies in International Finance No. 19 (Princeton: Princeton University Press, 1967).
25. N. Kaldor, 'The Case for Regional Policies', Scottish Journal of Political Economy, Vol. 17 (Nov. 1970), pp.337-348.
26. While her own empirical work did not provide any correlation, Whitman cites J T Romans Capital Exports and Growth Among U.S. Regions (Middletown, Conn.: Wesleyan University Press, 1965) and G H Borts and J L Stein, Economic Growth in a Free Market (New York: Columbia University Press, 1964), Chapters 7 and 10, whose studies indicate a strong correlation between high growth and a deficit on current account (surplus on capital account). Their conclusions indicate the view that capital flows accommodate demand (MEC) shifts rather than themselves generating growth. F A Lees, 'Interregional Flows of Funds through State and Local Government Securities (1957-1962)', Journal of Regional Science, Vol. 9 (April 1969), pp.79-86, came to a similar conclusion on the basis of later U.S. data.
27. G Myrdal, Economic Theory and Underdeveloped Regions (London: Methuen, 1964), A O Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1972) and N Kaldor, op.cit.
28. Op.cit.
29. Op.cit.
30. E V Morgan, 'Regional Problems and Common Currencies', Lloyds Bank Review, No. 110 (Oct. 1973), pp.19-30.

31. C P Kindleberger, The Formation of Financial Centers: A Study in Comparative Economic History (Princeton: International Finance Section, Princeton University Press, 1974).
32. We shall adopt the convention of designating international reserves as being central monetary authorities' holdings of foreign exchange, gold, Special Drawing Rights and reserve positions with the International Monetary Fund. The vast literature on international liquidity, until 1973, is reviewed in the following articles:
R W Clower and R G Lipsey, 'The Present State of International Liquidity Theory', American Economic Review, Vol. 58 (May 1968), pp.586-595; J Niehans, 'The Need for Reserves of a Single Country' in International Monetary Fund (ed.) International Reserves: Needs and Availability (Washington, D.C.: IMF, 1970) pp.49-85;
H G Grubel, 'The Demand for International Reserves: A Critical Review of the Literature', Journal of Economic Literature, Vol. 9 (Dec. 1971), pp.1148-1166; and J Williamson, 'International Liquidity: A Survey', Economic Journal, Vol. 83 (Sept. 1973) pp.685-746.
33. See, for example, A P Thirlwall, 'The Balance of Payments Constraint as an Explanation of International Growth Rate Differences', Banca Nazionale del Lavoro Quarterly Review, No. 128 (March 1979), pp.45-53.
The two-gap models of economic development also stress the foreign exchange constraint on growth in developing countries. See A P Thirlwall, Financing Economic Development (London, Macmillan 1976) for a survey of the relevant literature.
34. R Triffin, 'National Central Banking and the International Economy', Review of Economic Studies, Vol. 14 (Feb. 1947) pp.53-75.
35. See, for example, the 1963-64 debate on liquidity shortage as

described by M G de Vries, The International Monetary Fund 1966-1971: The System Under Stress, Vol. I (Washington, D.C.: IMF, 1976), chapter 2.

36. H G Johnson, op.cit.
37. H G Johnson clarifies the distinction between seignorage and social saving in 'Appendix: A Note on Seignorage and the Social Saving from Substituting Credit for Commodity Money' in R A Mundell and A K Swoboda (eds.), Monetary Problems of the International Economy (Chicago: University of Chicago Press, 1970), pp.323-329.
38. See, for example, H G Grubel, 'The Distribution of Seignorage from International Liquidity Creation', in R A Mundell and A K Swoboda (eds.) ibid., pp.269-282.
39. Both are readings in the volume edited by K E Boulding and J F Wilson, Redistribution Through the Financial System: The Grants Economics of Money and Credit (New York: Praeger, 1978): H G Johnson, 'Seignorage and the "Inflation Tax" in an International Setting', pp.20-37 and B Klein, 'Money, Wealth and Seignorage', pp.3-19.
40. British Government Publication, Cmnd. 6437 (London: H M Stationery Office, 1943), reprinted in H G Grubel (ed.) World Monetary Reform: Plans and Issues (Stanford: Stanford University Press, 1964) pp.55-79.
41. British Government, op.cit., pp.72-74. For a recent discussion of the provisions to control short-term capital movements in both the Keynes and White Plans, see Marcello de Cecco, 'Origins of the Post-War Payments System', Cambridge Journal of Economics, Vol. 3 (March 1979), pp.49-61.

42. P B Kenen and E B Yudin, 'The Demand for International Reserves', Review of Economics and Statistics, Vol. 47 (Aug. 1965), pp.242-250.
43. P B Clark, 'The Demand for International Reserves: A Cross-Country Analysis', Canadian Journal of Economics, Vol. 3 (Nov. 1970), pp.577-594.
44. Explanations for prolonged one-way speculative activity may be quite straightforward. See, for example, W J Boyes and S D Gerking, 'A Liquidity Trap in the Foreign Exchange Market: The Case of Mexico', International Economic Review, Vol. 19 (Oct. 1978), pp.777-785. The predictive difficulty arises with the more common erratic fluctuations in short-term capital flows.
45. This approach was pioneered in H R Heller, 'Optimal International Reserves', Economic Journal, Vol. 76 (June 1966), pp.296-311.
46. See, for example, E Baltensperger, 'The Precautionary Demand for Reserves', American Economic Review, Vol. 64 (March 1974), pp.205-210.
47. See H R Heller and M S Khan, 'The Demand for International Reserves under Fixed and Floating Exchange Rates', IMF Staff Papers, Vol. 25 (Dec. 1978), pp.623-649.
48. A discussion of the monetarist literature on the demand for reserves will be reserved until the discussion of the elasticity of the supply of reserves.
49. See, for example, J H G Olivera, 'The Square-Root Law of Precautionary Reserves', Journal of Political Economy, Vol. 79 (Sept./Oct. 1971), pp.1095-1104.

50. The distinction between developed and developing countries even at the time of these studies was not very helpful. In between the developed countries and the low-income developing countries, there is now a sizeable group of middle-income developing countries as well as the separate category of oil-exporting countries.
51. See, for example, Clark, op.cit., M G Kelly, 'The Demand for International Reserves', American Economic Review, Vol. 60, (Sept. 1970) pp.655-667 and M J Flanders, The Demand for International Reserves, Princeton Studies in International Finance, No. 27 (Princeton: Princeton University Press, 1971).
52. J A Frenkel, 'The Demand for International Reserves by Developed and Less-Developed Countries', Economica, Vol. 41 (Feb. 1974), pp.14-24.
53. See Clark, op.cit.
54. E Despres, C P Kindleberger and W S Salant, 'The Dollar and World Liquidity', in L H Officer and T D Willett (eds.) The International Monetary System: Problems and Proposals (Englewood Cliffs, N.J.: Prentice-Hall, 1969) pp.41-52, and W S Salant, 'Financial Intermediation as an Explanation of Enduring "Deficits" in the Balance of Payments', in F Machlup, W S Salant and L Tarshis (eds.) International Mobility and Movement of Capital (New York: N B E R, 1972), pp.607-659.
55. See H G Grubel, Domestic Origins of the Monetary Approach to the Balance of Payments, Princeton Essays in International Finance, No. 117 (Princeton: Princeton University Press, 1967) and J A Frenkel and H G Johnson, 'The Monetary Approach to the Balance of Payments:

Essential Concepts and Historical Origins', in J A Frenkel and H G Johnson, The Monetary Approach to the Balance of Payments (Toronto: University of Toronto Press, 1976), pp.21-45 for outlines of the theory and its origins.

56. See H G Johnson, 'Towards a General Theory of the Balance of Payments', International Trade and Economic Growth: Studies in Pure Theory (London: George Allen and Unwin, 1958), pp.153-168 for the original expression of this viewpoint in the post-gold standard era.
57. See, for example, T Scitovsky, 'The Theory of the Balance of Payments and the Problem of a Common European Currency', Kyklos, Vol. 10 (1957), pp.18-44.
58. See, for example, R Triffin, 'The Myth and Realities of the So-called Gold Standard', in R N Cooper (ed.), International Finance (Harmondsworth: Penguin, 1969), pp.38-61.
59. See H G Grubel, The International Monetary System (Harmondsworth: Penguin, 1971), chapter 2.
60. J A Frenkel and H G Johnson, op.cit., p.36. The source of the quotation is given as: J S Mill, Essay on Some Unsettled Questions of Political Economy (London: 2nd edn., 1874).
61. See, for example, H R Heller, 'International Reserves, Money and Global Inflation', Finance and Development, Vol. 13 (March 1976), pp.28-30, 39.
62. R A Mundell, 'The International Distribution of Money in a Growing World Economy', in J A Frenkel and H G Johnson, op.cit., pp.92-108.

63. R Triffin, op.cit.
64. The theme of different degrees of price flexibility was also taken up by N Kaldor, 'The Case for Regional Policies', Scottish Journal of Political Economy, Vol. 17 (Nov. 1970), pp.337-348 in terms of regional development.
65. See R A Mundell, 'A Theory of Optimal Currency Areas', American Economic Review, Vol. 51 (Sept. 1961), pp.657-665.
66. See J M Fleming, 'On Exchange Rate Unification', Economic Journal, Vol. 81 (Sept. 1971), pp.467-488 and Y Ishiyama, 'The Theory of Optimum Currency Areas: A Survey', IMF Staff Papers, Vol. 22 (July 1975), pp.344-383.
67. See P B Kenen, Capital Mobility and Financial Integration: A Survey, Princeton Studies in International Finance No. 39 (Princeton: Princeton University Press, 1976). Other recent surveys include R Bryant, 'Empirical Research on Financial Capital Flows', in P B Kenen (ed.) International Trade and Finance : Frontiers for Research (Cambridge: Cambridge University Press, 1975), pp.321-362; Z Hodjera, 'International Short-Term Capital Movements, A Survey of Theory and Empirical Analysis', IMF Staff Papers, Vol. 20 (Nov. 1973), pp.683-740 ; and D E Logue, M A Salant and R J Sweeney, 'International Integration of Financial Markets: Survey , Synthesis and Results', in C H Stern, J H Makin and D E Logue (eds.), Eurocurrencies and the International Monetary System (Washington: American Enterprise Institute for Public Policy Research, 1976), pp.91-137.

68. E E Leamer and R M Stern, 'Problems in the Theory and Empirical Estimation of International Capital Movements', in F Machlup, W S Salant and L Tarshis, (eds.), International Mobility and Movement of Capital (New York: N B E R, 1972), pp.171-206.
69. R Z Aliber, 'The Integration of National Financial Markets: A Review of Theory and Findings', Weltwirtschaftliches Archiv, Vol. 114, (1978), pp.448-480.
70. See, for example, D C Beek, 'Commercial Bank Lending to the Developing Countries', Federal Reserve Bank of New York Quarterly Review, Vol. 2 (Summer 1977), pp.1-8; I Kapur, 'An Analysis of the Supply of Euro-currency Finance to Developing Countries', Oxford Bulletin of Economics and Statistics, Vol. 39 (Aug. 1977), pp.171-188, and G D Short and B B White, 'International Bank Lending: A Guided Tour Through the Data', Federal Reserve Bank of New York Quarterly Review, Vol. 3 (Autumn 1978), pp.39-46.
71. R W Goldsmith, Financial Structure and Development (New Haven and London: Yale University Press, 1969)
72. R I McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution 1973) and E S Shaw, Financial Deepening in Economic Development (New York: Oxford University Press, 1973).
73. I Fisher, The Purchasing Power of Money: Its Determination and Relation to Credit Interest and Crises, reprint of 1922 edition (New York: Augustus Kelley, 1963).
74. The transmission mechanism differs as between McKinnon and Shaw. The former concentrates on rural areas inadequately serviced by

banks, which rely on self-financing for investment; the operative interest rate is the real rate of return on bank deposits.

Shaw considers economies with a greater degree of intermediation, so that the crucial rate of interest is the real rate of return on bonds. See M J Fry, 'Money and Capital or Financial Deepening in Economic Development?', Journal of Money, Credit and Banking, Vol. 10 (Nov. 1978), pp.464-475 for a comparison of the two approaches.

75. See, for example, U Tun Wai, 'Interest Rates Outside the Organised Money Markets of Underdeveloped Countries', IMF Staff Papers, Vol. 6 (1957-8), pp.80-142.
76. See A Bhaduri, 'On the Formation of Usurious Interest Rates in Backward Agriculture', Cambridge Journal of Economics, Vol. 1 (Dec. 1977), pp.341-352.
77. See A Bottomley, 'The Cost of Administering Private Loans in Underdeveloped Rural Areas', Oxford Economic Papers, Vol. 15 (June 1963), pp.154-163.
78. The Monetary Control Act of 1980 has, among other things, made reserve requirements uniform on equivalent types of deposit with all institutions. Until then, reserve requirements differed between banks and non-banks, and also between state-chartered banks and members of the Federal Reserve System.
79. S C Tsiang, 'The Diffusion of Reserves and the Money Supply Multiplier', Economic Journal, Vol. 88 (June 1978), pp.269-284.

80. R J Miller, The Regional Impact of Monetary Policy in the United States, (Lexington, Mass.: Lexington Books, 1978).
81. H P Minsky, 'Commercial Banking and Rapid Economic Growth in California', in H P Minsky (ed.), California Banking in a Growing Economy: 1946-1975 (Berkeley: University of California Institute of Business and Economic Research, 1975), pp.79-134.
82. M R Straszheim, 'An Introduction and Overview of Regional Money Capital Markets', in J F Kain and J R Meyer (eds.), Essays in Regional Economics (Cambridge, Mass.: Harvard University Press, 1971), pp.218-239.
83. A Phillips, 'Evidence on Concentration in Banking Markets and Interest Rates', Federal Reserve Bulletin, Vol. 53 (June 1967), pp.916-926.
84. R G Dreese, 'Banks and Economic Development', Southern Economic Journal, Vol. 40 (April 1974), pp.647-656.
85. A final body of literature which could be categorised as establishing a relationship between financial structure and relative economic development is contained in what may be broadly categorised as radical, or Marxist, literature. The banking system is interpreted as being a vehicle for exploitation by the capitalist class (situated in the urban centres of developed countries) of the working class in developed countries, and the population of developing countries in general. Money is thus a vehicle for exacerbating the maldistribution of income. See, for example, E Mandel, Capitalism and Regional Disparities (Toronto: New Hogtown Press, 1973) C Payer, The Debt Trap: The International Monetary Fund and the Third World (New York: Monthly Review Press, 1974) and T Hayter, Aid as Imperialism (Harmondsworth: Penguin, 1971)

Introduction

It has been suggested, in Chapter 1, that the distributional composition of macroeconomic aggregates has not been a major feature of monetary theory. In neoclassical theory the effects of money supply increases on the distribution of income occur primarily in the short-run, as a result often of market imperfections. While Keynesian theory on the other hand concentrates on distributional considerations, short-run outcomes, and market imperfections, these have been dealt with primarily in real terms, with little reference to the role of money.

Distributional concerns are, in contrast, central to economic policy. Since policy necessarily refers to institutions and jurisdictions which are territorially specific, and since short-run outcomes and the implications of market imperfections must be taken into account, many policy issues must deal with the spatial features of money and financial institutions, in the short-run as well as in the long-run.

Spatial monetary questions arise when institutional arrangements governing financial transactions are being designed. Thus, when the rules of operation of the International Monetary Fund (I.M.F.), the European Monetary System (E.M.S.), or a domestic banking system are being designed or altered, the implications for the economies of all participants are discussed explicitly. Further, the real distributional

effects of distributions of money are a central issue when criteria are being established for a distribution of Special Drawing Rights (S.D.R.) by the I.M.F., or a redistribution of funds within the European Economic Community (E.E.C.), or fiscal transfers between levels of government in a federal state such as the United States.

The purpose in this chapter of outlining the literature dealing with these apparently diverse policy areas is to demonstrate the fundamental similarity between the underlying theoretical issues. On this basis, an attempt is made in Part II to construct a common theoretical framework to apply to spatial/distributional monetary questions in a variety of contexts. As a result, the scope of the discussion is widened to touch on monetary theory and policy in general. If it can be concluded that money supply changes have a different effect on the distribution of real income and output depending on the location and manner of the change, then the national or global real income effect will also be affected. Such a conclusion would suggest that the composition of changes in macroeconomic aggregates is as important for economic policy as the size of those changes.¹

First, however, in this chapter the recognised policy issues are considered in the light of alternative economic policy approaches.

International Monetary Fund

The establishment of criteria for the distribution of S.D.R.

among participants is the policy issue where the relevance of money distribution for the level and distribution of output is made most explicit. Initially, S.D.R. were distributed proportionately to I.M.F. quotas. But, during the I.M.F. reform discussions following the 1971-2 breakdown of the international financial system, proposals were under serious consideration for alternative criteria for distribution. These proposals were classified as the S.D.R./Aid Link (or the 'Link'), comprising a variety of means by which S.D.R. allocations could be directed towards the developing countries. The issue remains unresolved as much on technical grounds as on equity grounds. (It has however been taken up in more general form under the question of provision of development finance by the New International Economic Order literature.)

The reference point for discussing the Link has been the actual allocation, which was designed to be distributionally neutral in the sense that it would not lead to a transfer of real resources. I.M.F. members' quotas, the basis for S.D.R. allocation (as well as for I.M.F. credit and voting power), are determined by a formula which is a linear function of actual gold and foreign exchange reserve holdings, national income, import and export levels and variability of exports.² Other factors may also be taken into account during the periodic quota reviews.³ The resulting distribution of quotas, by econometric estimation, is a percentage of actual reserve holdings which is a positive function of the level of exports.⁴ Actual reserve

holdings are the customary measure of long-run demand for reserves. The size of the trade account is one measure of need; to the extent that actual holdings are constrained from reaching holdings which would satisfy need, the adjustment for trade level brings quotas closer to a given percentage of desired reserve holdings.⁵ As a corollary, there should be no incentive to adjust reserve holdings following an S.D.R. allocation; the allocation is thus designed to be 'neutral'.⁶

The alternative proposals for allocations in favour of developing countries were put forward on egalitarian grounds. The subsequent debate however was conducted primarily in terms of the effect of different distributions on world output and inflation, and the functioning of the international monetary system. While this form of opposition to the proposals may have been fostered by political opposition on equity grounds, the currency given to the non-equity arguments is nevertheless significant given their divergence from customary theoretical representations (particularly those of international monetarists to whom distributional considerations are, theoretically, only of equity significance).

The arguments on both sides of the debate for and against the Link have been extensively surveyed.⁷ The two (related) aspects of the debate of interest here are the question of whether a change of distribution as represented by the Link would be inflationary and whether it would undermine confidence in the S.D.R. as a reserve asset.

The inflation question had two aspects. The first related to

how the Link would affect total liquidity (including aid): whether there would be offsets in aid allocations (i.e. total liquidity would be reduced, total S.D.R. allocations remaining as they would otherwise have been), and whether the size of S.D.R. allocations would be determined by development requirements rather than global monetary requirements (i.e. whether the Link would induce larger S.D.R. allocations than would otherwise have been the case). The debate concerning the political variables relevant to the overall size of financial flows to developing countries implicitly adopted the international monetarist view that the world money supply is a homogeneous aggregate which has significance for inflation independent of its spatial composition. It was assumed, therefore, that there is, at any point in time, an amount of world money which is desirable from a global macroeconomic point of view whether it is distributed according to I.M.F. quotas, or an S.D.R./Aid Link. By definition, any additional allocations for development purposes would be 'too inflationary'. (Of course each quinquennial S.D.R. allocation would be a once-and-for-all addition to the stock of international money. It would only increase the rate of inflation, rather than just the level of prices, if it induced an inflationary policy response on the part of individual governments.)

Second, the Link might be inflationary as a direct result of the particular distribution involved, even if the world money stock were the same with or without the Link. If S.D.R. were allocated proportionate to I.M.F. quotas (the 'neutral' criterion),

then no real resource transfer would be expected to ensue; each participant would add the allocation to idle balances. As a corollary, the Link would instead add to developing countries' reserves in excess of desired idle balances. The excess would revert to the developed countries in exchange for additional exports to developing countries. Reserves distribution would be restored in the long-run to the initial distribution; the difference from the I.M.F. quota criterion for the initial allocation would be that a transfer of real resources would have been made to the developing countries. Short-run inflation would occur if there were supply constraints on the developed countries' export sectors.

This representation of the long-run outcome is entirely analogous to Archibald and Lipsey's critique of Patinkin,⁸ who had suggested that the quantity theory of money only holds in a domestic economy if additions to the money supply are distributed proportionate to initial holdings. Archibald and Lipsey argue that any non-neutrality of money only applies in the short-run, on some paths to the unique long-run equilibrium where the quantity theory holds regardless of distribution.

Curiously, it is sometimes the same international monetarists who view world inflation in terms of the global money stock who are nevertheless concerned about the inflationary consequences of the distribution of that money stock.⁹ The United Nations Committee on Trade and Development (U.N.C.T.A.D.) in particular has, however, stressed the real output effects of the change in expenditure pattern which would result from the Link.¹⁰ It is argued that the unemployment in developed countries results from

lack of effective demand, which could be eased by increased demand from developing countries. By positing the existence of unemployed resources U.N.C.T.A.D. demonstrates that the Link could increase total output compared with alternative distributions (an outcome impossible in the neoclassical model, at least in the long-run).

U.N.C.T.A.D.'s is the customary Keynesian argument, analogous to that which advocates income redistribution in favour of income classes with high marginal propensity to consume in order to raise aggregate demand. It is basically a 'real' argument, without reference to the particular qualities of money.

The second area of debate which concerns us here refers specifically to S.D.R. as a form of international money (where this refers to transactions between central monetary authorities). Concern was expressed that the Link might undermine confidence in S.D.R. as a reserve asset. However little objective basis there might be for such a change in confidence, it is of considerable significance. In particular, if interest payments on S.D.R. holdings have to be increased to compensate for reduced confidence, the seignorage accruing to those who use S.D.R. in transactions is correspondingly reduced. As a result, first, the seignorage (or 'confidence' rent) available for distribution via S.D.R. allocations would be correspondingly reduced. Second, the disincentive to use S.D.R. would reduce the ability to reap social saving from the convenience of S.D.R. use, increasing use of more 'costly' media. Thus, even from the static point of view of distributing a given

total of seignorage and social saving, the total available is determined itself by the distributional criteria and their (psychological) effect on confidence.¹¹

The entire issue has now declined in importance; S.D.R. continue to be allocated proportionate to quotas which approximate to a measure of long-run demand with an adjustment for need measured by trade levels. The presumption is that allocations of S.D.R. proportionate to desired reserve holdings will not result in any net use of S.D.R.¹² In fact, the developing countries have been the primary net users of S.D.R.¹³ There are two possible explanations for this unintended outcome: one, that the quota criterion produces excessive allocations to developing countries (the general equilibrium explanation) or two, that developing countries were not necessarily on a path to equilibrium (or at equilibrium) either before allocations, or at other points of observation. Net use of S.D.R., in this view, is consistent with excess demand for reserves. The first explanation would prompt the design of an improved measure of desired holdings by which to measure the (short-run) redistributive effects of particular allocations. The second would prompt a consideration of the dynamics of balance of payments adjustment in developed and developing countries in order to explain changes in actual reserve holdings.

Indeed much of the debate as to what constitutes reserves 'need' refers to the different balance of payments adjustment conditions facing different types of country. The particular adjustment problems faced by developing countries have prompted the

setting up of special credit facilities with the I.M.F.: the buffer stock and compensatory finance facilities to deal with the problems of heavy dependence on particular raw material exports, and the oil facility to deal with the problems of similar dependence on oil imports.

It is argued, however, that even aside from these particular trade account problems, developing countries still shoulder a relatively high share of the burden of adjustment to payments imbalance between developed and developing countries.¹⁴ In particular, deficit-prone countries are more constrained to adjust than surplus-prone countries because of the finite nature of reserve holdings. Further, the lesser availability of unconditional credit to developing countries renders actual reserve holdings a more effective constraint. To the extent that countries in deficit deflate real output when forced to adjust, thus removing the necessity for countries in surplus to reflate, adjustment overall will be deflationary. Further, there is a general consensus that different types of adjustment policy are appropriate for developed and developing countries. While there is some debate, the balance of opinion appears to favour the view that adjustment is more difficult, and the opportunity cost of adjustment higher, for developing countries.¹⁵

The asymmetry between the pressures on countries in surplus and in deficit to adjust has long been observed. The U.K. Bretton Woods proposal put forward during the discussions leading up to the formation of the I.M.F. incorporated penalties on

countries in surplus equivalent to the borrowing cost penalty on countries in deficit, so that pressure to adjust would be symmetrical.¹⁶ (All official transactions would be cleared through the International Clearing Union (an I.M.F.-substitute), so that debtor and creditor positions in the Union would be equivalent to net balance of payments positions.) Provision was included in the Articles of Agreement (Article VII) to deal with the scarcity of strong currencies by a variety of measures, but it has not so far been invoked.

The effectiveness of a given finite amount of reserves, as a constraint on expenditure, depends on how readily, and at what cost, they may be supplemented. The differential ability of developed and developing countries (particularly the low-income developing countries) to obtain additional balance of payments financing from sources other than the I.M.F. was evidenced by the heavy reliance (until recently) of developing countries on I.M.F. finance, in spite of its conditionality.¹⁷ Since the early 1970s, the supply of petrodollars on the Eurodollar market has been excessive relative to the demand of developed countries. The higher-income developing countries have readily taken up the excess supply, in preference to the conditional (if lower interest cost) credit from the I.M.F.

The adoption of adjustment policies, of a type, or at a speed, not necessarily preferred by the borrowing countries, is the condition for borrowing from the I.M.F. beyond a specified level. This enforced adjustment may be viewed as providing a continued social saving by perpetuating the stability of the

international monetary system, or, alternatively, reducing long-run output in the borrowing country and thus the world by imposing undesired adjustment to short or medium term imbalances. The particular costs incurred by developing countries adjusting to remove a deficit may be described in terms ranging from Cohen's analysis of the relative difficulty of fine-tuning developing economies¹⁸ to Payer's analysis of I.M.F. conditionality as a vehicle for capitalist oppression.¹⁹

In short, then, the general picture is one of relatively high liquidity demand on the part of developing countries in order to avoid costly adjustment to payments imbalances often arising from externally generated demand changes. This demand is however faced with international credit rationing, except on the part of the I.M.F. which may require the adoption of particular (costly) adjustment policies. The supply constraint also is endogenous in the sense that credit availability is often a positive function of current reserves levels.²⁰ For the major developed countries, in contrast, the supply of reserves is highly elastic, through swap arrangements drawn on in times of reserves shortage. The implications, both for short-term economic conditions and for long-term growth, of the foreign exchange constraint on developing countries is highlighted in the 'two-gap' models of economic development which give it prominence equal to the savings constraint.²¹ The availability of means of exchange is thus given greater prominence in the international arena than the domestic economy.

The manner in which additions to reserves are distributed

is thus regarded as being of significance for the level and distribution of world output as well as for domestic and world price levels. While there is wide disagreement as to the nature of that significance, there is a marked contrast with theoretical (monetarist) arguments couched in terms of a homogeneous world money supply.²²

European Economic Community

The implications of particular financial arrangements for countries at different stages of economic development have come into clear focus also in the issues relating to monetary unification of the E.E.C. The possibility of monetary unification in Europe has been analysed since the 1950s.²³ A variety of proposals has emerged, some dealing with transitional systems and others with the ultimate form of the monetary union, which is generally perceived as involving a common currency and a European central bank.²⁴ Monetary union in turn is seen as part of a general economic unification process whereby fiscal policy, commercial policy, industrial policy, etc. are common to all member states.

During the two decades of intermittent debate, two major experiments in transition to unification were introduced: the narrowing of margins of fluctuation between member currencies (the 'snake') in 1972 (on a voluntary basis, from 1971) foundering in 1973; and the introduction of the European Monetary System (E.M.S.) in 1979 with narrowed margins of fluctuation, an intervention-signalling system with respect to the European Currency Unit (E.C.U.)

valued on the basis of a basket of currencies, and a common fund for bilateral credit.

At the political level, the perception that monetary unification may have a differential impact on the output, employment and price level of each of the E.E.C. members is strongly held.²⁵ Germany, for example, perceives the spread of inflation following unification, because of national differences in the position of (and position on) the relevant national Phillips curves. Accordingly, the Schiller proposal urged unification first of monetary and fiscal policies in order to facilitate a non-inflationary monetary union. Exponents of this approach have been dubbed 'economists'. France, on the other hand, perceives a benefit in terms of real income transfers in her favour through the Common Agricultural Policy once monetary union is achieved. The Barre Plan thus urged the early approach to monetary union, with economic union to follow. Exponents of this alternative approach have been dubbed 'monetarists'.²⁶

In spite of the different origins of the name, many 'Chicago' monetarists are also monetarists in the E.E.C. sense.²⁷ Starting from the argument that each member's unemployment rate only varies from its natural rate in the short-run through attempts to reduce it, the 'monetarists' perceive no long-term scope for national policy concerning unemployment and thus no potential conflict between national policies. Economic union is difficult to achieve politically, thus monetary union should be introduced first; the inability thereafter to conduct independent national monetary

policy will discourage any efforts to move off the long-run vertical Phillips curve. Each member would thus be fixed at its (possibly differing) natural rate of unemployment, with a uniform inflation rate. As a corollary, implicit in this approach is the understanding that it is only the existence of separate currencies in Europe which allows the persistence of differing economic policy stances and the resulting misallocation of resources.²⁸ A diversity of monies at the international level is thus treated as if it were a market imperfection without which all the general equilibrium results would emerge: uniform factor and commodity prices, perfect mobility of capital and labour, stable price levels, balance of payments equilibrium automatically restored following any disturbance, etc.²⁹

The monetarists are certainly aware of the problem of transition to such a state, although the All Saints Day parallel currency proposal is designed to minimise them.³⁰ Such problems are however regarded as of secondary importance in relation to the long-run outcome, and in particular are not viewed as impeding progress towards that outcome. In contrast, the 'economists' view the transition process as of critical importance. The distributional implications of monetary unification prior to economic unification are seen as being sufficiently major to jeopardise the entire unification process. The argument is taken in some cases as far as to suggest that the E.E.C. is not in any case an optimal currency area.³¹ Indeed if economic union is impossible in the long-run unless all members can attain a uniform stage of economic development with uniform factor

prices, then the transitional distributional effects of monetary union could persist in the long-run.

The two major structural problems posed by the irreversible fixing of exchange rates, or their replacement by a European currency, relate to the questions of Phillips curves and productivity differences, respectively. First, if the medium-term Phillips curves are not vertical, and differ as between E.E.C. members, then there will be a continued interdependence between the particular uniform inflation rate jointly chosen and the level and distribution of unemployment. Since the current combination of power structure and preference structure favours low inflation rates, the result will be high unemployment in those countries with the flatter Phillips curves furthest from the origin.

Second, members will enter the monetary union with different productivity performances. Without the instrument of exchange rate adjustment to eliminate the widening gap between tradeables prices as these productivity differences continue, resort must be made to deflation in low-productivity regions and reflation in high productivity regions (by fiscal means since monetary targets will have been fixed under monetary unification). In the neo-classical model, the result should be equalisation of unit labour costs and rates of return on capital, assisted by factor mobility, and a return to trade balance. Some, however, question the inevitability of such an outcome raising instead the possibility that adjustment may be destabilising, with outward factor movement and deflation further impeding the dynamic process necessary for

the generation of optimistic expectations and improved productivity.³²

Those who view such potential instability only as a short-run, or medium-term, phenomenon propose transfer of funds to low productivity regions or countries to offset the absence of the exchange rate instrument, as well as the expected outflow of capital accompanying that absence.³³ Magnifico goes further in his 'new approach', proposing the explicit application of different economic policies in high-growth and low-growth regions on the grounds that economic policy otherwise reflects the needs of the former at the expense of the latter.³⁴ In particular he stresses the importance of making credit available in low-growth regions, quoting the successful experience of the regional Italian banks. While he acknowledges the dampening effect on regional multipliers of a high propensity to import, nevertheless the net effect is seen as positive. This contrasts markedly with de Grauwe and Peeters' objection to the proposal for fund transfers along with the introduction of the E.M.S. on the grounds that productivity differences cannot be identified until costs and prices become uniform following monetary unification.³⁵

In a sense the 'monetarist' and 'economist' approaches are consistent. Following monetary and economic union, according to the monetarists' approach, the outcome of productivity differences is to promote the factor movements which eradicate them. But, viewed as a dynamic rather than marginal process, this involves the effective contraction of the low-productivity regions through

the flight of labour and capital which the economists wish to avoid.

Thus again there is a strong sense in the policy literature of the real distributional effects of monetary change. We now consider whether European monetary arrangements have implications also for the level of total real output, and its relationship to the underlying distribution. The primary benefits of monetary union are couched in similar terms to those derived from the establishment of the I.M.F. in the post-World War II reconstruction period. Irreversible fixity of exchange rates, or the emergence of a European currency would ensure the liquidity of international money in Europe, confidence in the central monetary authority and thus in the maintenance of that money's value, and finally the full convertibility of that money. There would be a social saving derived from the increased international 'moneyness' of members' currencies directly, or when freely convertible into a European currency.³⁶ Economies of scale would be reaped in terms of lower reserves requirements for each country (or the E.E.C. in aggregate).³⁷ Commercial and financial transactions would be facilitated and production costs reduced as a result of the increased productivity of money.

In addition to this increase in efficiency, capital flows would be facilitated, increasing flows out of low-productivity regions and into high-productivity regions. The money supply of each member would become elastic to a much greater degree than before monetary unification, responding to major investors'

perceptions of highest financial returns. Demand for money conditions would also change as the configuration of output and expectations of future output changed with the new arrangements. The proposals for increased regional finance made available both through the Regional Fund, to offset the effects of monetary unification and also the the transfers made to Ireland and Italy to induce participation in the E.M.S. in January 1979, suggest the expected emergence of excess demand for money in low-productivity countries and regions (although the primary purpose of the transfers would be as a vehicle for income transfer).

For the transitional period at least, the increase in financial efficiency from monetary union and the equity concerns of the low-productivity regions are interdependent. The increase in financial efficiency is predicated on the degree of confidence in the new monetary system. This confidence could be jeopardised by a financial crisis prompted in a low-productivity member country experiencing an excess demand for money, a trade deficit and institutional price and wage rigidity. Only the strongest form of monetary union (with credit facilities and no probability of a return to exchange rate changes) and of economic union (with a powerful regional policy) could survive that kind of crisis; the problem is how to generate this degree of strength without a financial crisis arising in the transition process.

The Regional Aspects of the Domestic Financial Structure

The bulk of the regional finance policy literature is concerned with fiscal transfers. In the case of federal states, these transfers are effected between the federal and state, or

provincial, levels of government, generally tied to particular expenditures or as a compensation for a low revenue base.³⁸ In the case of unitary states, the transfers are made to regional authorities or businesses for particular expenditure purposes, as a vehicle for regional policy.³⁹ In all cases, the rationale is given as inadequate tax revenue or inadequate savings, not inadequate liquidity. The entire issue may thus be discussed in real terms. Once we consider further regional differences in financial institutions and conditions, however, it will become apparent not only that availability of funds can provide an explicit rationale for regional policy, but also that fiscal transfers directly affect those institutions and conditions, with that effect varying depending on the type, if any, of expenditure to be financed by the transfer. As a corollary, the determination of the size of fiscal transfers should take into account their effect on money demand and supply.

The regional policy literature directly related to money and banking is that concerned with the design of financial institutions. Most work has arisen in connection with the U.S. banking system because of its strong regional character, although there has been some policy discussion in Canada in spite of the primarily national nature of the banking system.⁴⁰ Indeed the entire history of U.S. banking is dominated by a sense of the significance of its regional composition for the pattern of economic development.⁴¹

The U.S. banking system is split regionally into twelve Federal Reserve districts, each with a Federal Reserve bank owned

by members of the Federal Reserve System in that district. The system is controlled by the Board of Governors in Washington, D.C., which ensures regional representation on such key committees as the Open Market Committee which controls all open market operations by the Reserve banks. The system was deliberately designed to counteract the market power of the New York City banks, which were otherwise expected to dominate banking in the rest of the country. The scope for exercising monopoly power in banking has further been constrained by state legislation limiting the extent of bank branching. The most severe legislation is that of Illinois, prohibiting any branching; the most liberal is California, which allows state-wide branching.

The current trend away from pure unit banking raises major policy issues. This trend so far has consisted of growing non-branch association between banks, particularly by holding company acquisition.⁴² The growth of banking business conducted by foreign banks, which are not subject to State branching legislation, has encouraged pressure for less stringent branching legislation as the most direct means of increasing banking competitiveness and efficiency. The concentration-efficiency trade-off central to the issue of banking structure is generally discussed in the literature independent of its regional implications. At the political level, however, wider branching is opposed by those states which fear that a capital outflow would ensue.⁴³

The nature of the trade-off between concentration and efficiency is not fully established. On the one hand concentration

is associated in theory with curtailment of output (provision of banking services) which would tend to militate against the interests of peripheral regions, as would the concentration of ownership and control in (possibly remote) financial centres.⁴⁴ Nor is it clear whether efficiency in the provision of financial services would be increased or decreased by further concentration. On the one hand, the quality of services might improve with the 'moneyiness' of bank chequing accounts increasing with the size of the bank. On the other hand, a reduction in competition is normally associated with production below the level of minimum average cost.

Regional interests are more explicit in the literature on the regional impact of monetary policy, much of which refers to the decentralised structure of U.S. banking. Writing in 1955, Scott⁴⁵ demonstrates significant lags in the transmission of the effects of open market operations, and differences in the strength of their impact, as between financial centres and other regions (with the latter receiving a lagged, muted impact). He proposes the promotion of regional capital markets, or the use of statutory changes in reserve requirements, as alternative means of ensuring the speedy, uniform - and therefore effective - transmission of monetary policy. Ruffin,⁴⁶ in contrast, concludes in 1968 that the Federal Reserve Board does have close control over monetary conditions in all parts of the country, on the basis of a model of inter-bank flows of funds. He suggests that the correspondent banking system creates such effective links between all levels of

banking that two-thirds of the full impact of monetary policy change is felt by country banks within one month (compared with the entire impact in one month for reserve city banks). The difference between Scott and Ruffin's results may be attributable to a large degree to the increase in financial market integration between the two periods.⁴⁷

The implications of these findings for the impact of monetary policy on regional economies were not drawn. Fishkind⁴⁸ attempts to estimate directly the real regional effect of monetary policy (without isolating the role of transmission lags). His model is however expressed entirely in real terms (as are all the other similar studies to which he refers) so that regional differences derive entirely from different interest-elasticities of expenditure (the national interest rate structure being treated as uniform). Fishkind suggests that federal transfers to the regions should be employed to counteract the inequitable incidence of national monetary policy on different regions. There is no reference however to regional differences in money demand and supply conditions.

A complete regional model, with financial sector, is provided by Miller.⁴⁹ He employs bank multiplier analysis, incorporating regional financial portfolio differences, with monetary policy transmitted by interregional financial flows (multiplier leakages). The framework is general equilibrium, but he demonstrates the regional and national significance of differences in regional adjustment paths in the short-run. The

results derive essentially from the hypothesis of differing regional interest elasticities of demand for financial assets (as well as for real assets). The implications drawn for the effects on regional economies are however limited by the assumptions of a uniform national price level and interest rate structure combined with full employment and homogeneous output across all regions. In addition, all demand functions are stable with respect to the interest rate and the price level. Miller's work nevertheless represents a major advance in exploring the financial, as well as real, regional impact of monetary policy.

The regional effect of monetary policy has been discussed occasionally also in the context of national banking systems. Cairncross⁵⁰ examined the implications of contracting credit for the (peripheral) Maritime region of Canada, noting a disproportionately high impact on that region. He concludes that this impact is due more to the contraction of markets for local products as a result of nationwide credit restriction than to an excess demand for credit as such. He sees the policy solution as lying in the fiscal rather than the monetary field. This judgement contrasts with Magnifico's⁵¹ interpretation of the experience of the Italian regional banks.

Gaskin⁵² also doubts the feasibility of implementing a regionally-differentiated monetary policy within a national banking system (other than by directives to the banks on their loan allocation). Nevertheless he stresses more than Cairncross the disadvantage for low-growth regions in times of credit squeeze, resulting from the behaviour of financial institutions, rather than purely of export markets. He identifies three major benefits to be derived from discriminating in favour of low-growth regions in terms of credit availability.

First, borrowing with a view to increasing expenditure would reduce underemployment without jeopardising the overall effect of national monetary policy (except to the extent that the expenditure was directed outside the region). Second, a contraction of export markets would increase the demand for working capital; if this were not met, further unemployment would result. Finally, low-growth regions are dependent, for improved conditions, on the emergence of new industry; but credit for new loan applicants is generally restricted before that for long-standing clients. Thus, even if the means were not available to redress the balance by a regional monetary policy, there is reason over and above differences in the interest elasticity of demand within regions and their export markets for the means to be found within conventional regional policy.

Conclusion

Economic policy discussions thus mirror monetary theoretical debates between neoclassical long-run neutrality of money and Keynesian non-neutrality. Most of the policy issues discussed here have referred to the design of institutions (the I.M.F., the E.M.S. or domestic banking systems) rather than their day-to-day operations. As such, they encourage greater attention to long-run outcomes than is usual in economic policy discussions. Nevertheless, it is policy issues which bring out the breadth of the Keynesian concerns regarding short-run distribution effects which determine the long-run outcome.

These concerns arise in two types of context. First, money and financial markets are fundamentally institutional phenomena in a sense that commodity markets are not. The very design of money markets affects the nature of the product. Thus, the ability of a particular currency, or a deposit with a particular bank, to perform the money functions of unit of account, means of payment and store of value is determined by the way in which transactions may be conducted and the confidence held in the institutions generating the money. In international finance parlance, the 'moneyness' of an asset rests on the three factors of 'liquidity', 'convertibility' and 'confidence'. In Keynes' General Theory parlance, the relevant factors are the elasticities of supply and substitution and the liquidity premium. To the extent that short-run distributional considerations affect any of these factors, the ability of the institution to function at all in the long-term may be affected.

Second, different distributions of liquidity in the short-run affect the distributional pattern of expenditure and expenditure plans. This effect is seen in different contexts as arising from spatially differing interest-elasticities of expenditure, spatially differing degrees of credit availability under normal market conditions or spatially differing means of adjusting to payments imbalance (and costs associated with that adjustment). Given that there are unemployed resources in some regions and in some countries, different distributions of expenditure can lead to different long-run output levels.

The theory to be developed in Part II, then, posits a role for money in influencing the level and distribution of real income and output. Before proceeding to develop the theory, Chapter 3 discusses the broad monetary theoretic approach, and Chapter 4 the economic development approach on which the spatial monetary theory will be built in Part II.

Footnotes

1. Keynes at various times stressed the importance of composition, in J M Keynes, The General Theory of Employment, Interest and Money (London: Macmillan, 1966) chapter 21 and J M Keynes, 'How to Avoid a Slump', The Times, Jan.11-14, 1937. His followers however have concentrated on aggregates to the exclusion of compositional questions.
2. See O L Altman, 'Quotas in the International Monetary Fund', I.M.F. Staff Papers, Vol. 5 (Aug. 1956) pp.129-150.
3. See H Aufricht, The International Monetary Fund: Legal Bases, Structure and Functions (London: Stevens and Sons, 1964), pp.33-36
4. See R G Hawkins and C Rangarajan, 'On the Distribution of New International Reserves', Journal of Finance, Vol. 25 (Sept. 1970), pp.881-891.
5. The intention in introducing S.D.R. was that they should be held, not used. See A F Mohammed, "Comments on 'J Marquez', Reserves and Developing Countries'", in International Monetary Fund (Ed.) International Reserves: Needs and Availability (Washington, D.C.: International Monetary Fund, 1970) pp.112-114.
6. This policy stance was given theoretical support by H G Grubel, 'The Distribution of Seignorage from International Liquidity Creation', in R A Mundell and A K Swoboda (eds.), Monetary Problems of the International Economy, (Chicago: University of Chicago Press, 1970), pp.276-282.
7. See for example Graham Bird, The International Monetary

- System and the Less Developed Countries (London: Macmillan, 1978), John Williamson, The Failure of World Monetary Reform, 1971-74 (Sunbury-on-Thames: Thomas Nelson, 1977), R L Haan, Special Drawing Rights and Development (Leyden: Stenfert Kroese, N V, 1971) and W R Cline, International Monetary Reform and the Developing Countries (Washington, D C: Brookings Institution, 1976).
8. G C Archibald and R G Lipsey, 'Monetary and Value Theory: A Critique of Lange and Patinkin', Review of Economic Studies Vol. 26 (Oct. 1958), pp.1-22.
 9. See for example, G Haberler, 'The Case Against the Link', Banca Nazionale del Lavoro Quarterly Review, No. 96 (March 1971), pp.13-22, and 'Inflation as a World-Wide Phenomenon - An Overview', Weltwirtschaftliches Archiv Vol. 110 (1974), pp.179-193.
 10. U.N.C.T.A.D., International Monetary Issues and the Developing Countries, TD/B/32 (TD/C/C.3/6) New York, 1965.
 11. Williamson, op.cit., dismisses the confidence question, putting emphasis rather on the interest rate question, ignoring the necessary connection between the two.
 12. The I.M.F.'s lack of confidence that no net transfer of S.D.R. (and thus real resources) would occur even over long periods is demonstrated by the inclusion of the 'reconstitution' provision which requires participants to maintain an average holding of 30% of initial allocations over any five-year period (i.e. net use not exceeding 70%). See Joseph Gold, Special Drawing Rights: Character and Use (Washington, D C: I.M.F., 1970).

13. Bird, op.cit., pp.194-196, shows S.D.R. holdings as a percentage of allocations at end-1976. Industrial countries' holdings stood at 113%, while non-oil-exporting developing countries' holdings stood at 51%, with individual developing countries ranging from 1% to 112%.
14. See in particular Bird, op.cit. and G Maynard and G Bird, 'International Monetary Issues and the Developing Countries: A Survey', World Development, Vol. 3 (Sept. 1975), pp.609-631. Also G K Helleiner, 'The Less Developed Countries and the International Monetary System', Journal of Development Studies Vol.10 (Apr/July 1974)pp.347-373, J Marquez, 'Reserves, Liquidity and the Developing Countries', in I.M.F. (ed.) International Reserves: Needs and Availability (Washington, D C: I.M.F., 1970) pp.97-111, and C F Diaz-Alejandro, Less Developed Countries and the Post-1971 International Financial System, Princeton Essays in International Finance No. 108 (Princeton: Princeton University Press, 1975).
15. See Maynard and Bird, op.cit. and B J Cohen, Adjustment Costs and the Distribution of New Reserves, Princeton Studies in International Finance No. 18 (Princeton: Princeton University Press, 1966). Cohen distinguishes between the 'continuing cost' of adjustment (the consequences of lowering output to remove a deficit or of raising it - a negative cost - to remove a surplus) and the 'transitional cost' of effecting the output change. Transitional costs, he argues, are higher for developing countries because of the lack of sophistication

of policy instruments and are higher the more speedy the adjustment process.

16. Great Britain, Proposals for an International Clearing Union, Cmd. 6437 (London: HMSO 1943).
17. See Bird, op.cit.
18. See B J Cohen, op.cit.
19. See C Payer, The Debt Trap: The International Monetary Fund and the Third World (New York: Monthly Review Press, 1974).
20. See J Marquez, op.cit.
21. See A P Thirlwall, Financing Economic Development (London: Macmillan, 1976).
22. See for example H R Heller, 'International Reserves, Money and Global Inflation', Finance and Development Vol. 13 (March 1976), pp.28-30, 39. A statistical relationship is established between world reserves holdings and the world price level. The analysis implies a homogeneous response in all countries to changes in reserves levels.
23. See, for example, J E Meade, 'The Balance-of-Payments Problems of a European Free-Trade Area', Economic Journal Vol. 67 (Sept. 1957) pp.379-396, and T Scitovsky, Economic Theory and Western European Integration (London: George Allen and Unwin, 1958).
24. The impetus was provided by P Werner, Report to the Council and Commission on the Realization by Stages of Economic and Monetary Union in the Community, Supplement to Bulletin 11-1970 of the European Communities (Brussels: E.E.C., October 1970) which set out a

programme for achieving economic and monetary union within the decade. The latter was to consist of:

'the total and irreversible convertibility of currencies, the elimination of margins of fluctuation in rates of exchange, the irrevocable fixing of parity ratios and the total liberation of movements of capital'.

25. See H.M.S.O., The European Monetary System, Cmnd. 7405 (1978) for an exposition of the U.K. policy stance. It demonstrates the U.K. perception of how its economic interests would be affected by participating in the E.M.S.
26. See J R Presley and G E J Dennis, Currency Areas: Theory and Practice (London: Macmillan, 1976), chapter 1 for a discussion of these national interests.
27. The views on monetary unification of a group of monetarist economists were published as T Peeters et al., 'The All Saints Day Manifesto for European Monetary Union', The Economist Vol. 257 (November 1, 1975), pp.33-38. The signatories and others have further elaborated on the Manifesto in M Fratianni and T Peeters (eds.), One Money for Europe (London: Macmillan, 1978).
28. See H Christie and M Fratianni, 'EMU: Rehabilitation of a Case and Some Thoughts for Strategy' in M Fratianni and T Peeters, op.cit., pp.3-34.
29. The strength of these equilibrating forces is predicated on the E.E.C. constituting an optimum currency area. Mundell

- defines optimality 'in terms of ability to stabilise national employment and price levels' in R A Mundell, 'A Theory of Optimum Currency Areas', American Economic Review Vol. 51, (Sept. 1961) pp.657-65.
30. The stabilising role of a parallel currency is put forward by R Vaubel, 'Minimising Imbalances in Monetary Union', in M Fratianni and T Peeters (eds.), op.cit., pp.109-126.
 31. A Lamfalussy, 'Monetary and Fiscal Integration' in F Machlup (ed.) Economic Integration, Worldwide, Regional, Sectoral (London: Macmillan, 1976), pp.218-228, provides evidence to suggest that the E.E.C. falls short on all criteria for an optimal currency area. He nevertheless supports the promotion of monetary union (after economic union) for financial efficiency and political reasons.
 32. See, for example, G Magnifico, European Monetary Unification (London: Macmillan, 1973), G Denton, 'Regional Problems and Policy', in G Denton (ed.) Economic and Monetary Union in Europe: The Economic Implications of Monetary Integration (London: Croom Helm, 1975), pp.68-89, and Frank Blackaby, in 'Symposium on The Problem of EMS', The Banker (Jan. 1979), pp.24-27.
 33. See G Denton, op.cit.
 34. See G Magnifico, op.cit.
 35. See P de Grauwe and T Peeters, 'The EMS, Europe and the Dollar' The Banker (April 1979), pp.39-45.
 36. This social saving is categorised alliteratively as 'inter-mediation', 'information' and 'innovation' by R A Mundell,

- 'Uncommon Arguments for Common Currencies', in H G Johnson and A K Swoboda (eds.), The Economics of Common Currencies (London: George Allen and Unwin, 1973), pp.114-132.
37. See T Scitovsky, 'The Theory of the Balance of Payments and the Problem of a Common European Currency, Kyklos, Vol.10 (1957), pp.18-44.
38. See for example N H Lithwick, Regional Economic Policy: The Canadian Experience (Toronto: McGraw-Hill Ryerson, 1978) Chapter 6.
39. See for example N Kaldor, 'The Case for Regional Policies', Scottish Journal of Political Economy, Vol.17 (Nov. 1970), pp.337-348.
40. See for example J N Benson, Provincial Government Banks: A Case Study of Regional Response to National Institutions (Vancouver: Fraser Institute, 1978).
41. See R C West, Banking Reform and the Federal Reserve 1863-1923 (Ithaca: Cornell University Press, 1977) for an account of the negotiations between regional (and other) interests leading up to the formation of the Federal Reserve System.
42. See S H Talley, 'The Impact of Holding Company Acquisitions on Aggregate Concentration in Banking', Staff Economic Studies No. 80 (Washington, D C: Board of Governors of the Federal Reserve System, 1974).
43. This point was made by S Talley, J Rose and D Savage of the Federal Reserve Board research staff concerned with banking structure during an interview on June 18, 1979. The major

- source for material on the branching question is U.S. Senate, Subcommittee on Financial Institutions of the Committee on Banking, Housing and Urban Affairs, Compendium of Issues Relating to Branching by Financial Institutions (Washington, D.C.: U.S. Government Printing Office, 1976).
44. The case for segmented financial markets as a means of promoting regional economic development is made in H P Minsky (ed.) California Banking in a Growing Economy: 1946-1975 (Berkeley: University of California Institute of Business and Economic Research, 1965).
 45. I O Scott, 'The Regional Impact of Monetary Policy', Quarterly Journal of Economics Vol. 69 (May 1955), pp.269-284.
 46. R J Ruffin, 'An Econometric Model of the Impact of Open Market Operations on Various Bank Classes', Journal of Finance Vol. 23 (Sept. 1968), pp.625-637
 47. T J Romans, Capital Exports and Growth Among U S Regions (Middletown, Conn.: Wesleyan University Press, 1965) is quoted by those demonstrating the speediness of the regional transmission of monetary policy as the authoritative proof of the near-perfection of interregional capital markets in the U.S.
 48. H H Fishkind, 'The Regional Impact of Monetary Policy: An Econometric Simulation Study of Indiana 1958-73', Journal of Regional Science, Vol. 17 (April 1977), pp.77-88.
 49. R J Miller, The Regional Impact of Monetary Policy in the U.S. (Lexington, Mass.: Lexington Books, 1978)

50. A K Cairncross, Economic Development and the Atlantic Provinces (Fredericton, N B: Atlantic Provinces Research Board, 1961).
51. See G Magnifico, op.cit., pp.22-29.
52. M Gaskin, 'Credit Policy and the Regional Problem', The Bankers' Magazine, Vol. 190 (Sept. 1960), pp.151-158.

Chapter 3 MONETARY THEORY - A CHOICE OF APPROACH

Introduction

The purpose of this thesis is to investigate the influence of money and financial institutions on the distribution of income between economies, whether national or regional. The particular hypothesis to be investigated is that, where real income disparities have arisen between economies, money and financial institutions, on balance, tend to exacerbate those disparities (except where there is offsetting government action).

The theories outlined in Chapter 1 which suggest ways of assessing this hypothesis arose from a variety of theoretical approaches and in a variety of contexts. But it is necessary that one theoretical framework be chosen in order to address the above hypothesis. In general, the two distinctive contemporary approaches to monetary theory which give money a significant role in the economy are the monetarist approach and the Keynesian approach (according to a particular interpretation¹). The former espouses the view that money is neutral in the long-run, and in general has no long-run distributional effects. The latter admits of non-neutrality of money in the short-run and the long-run, and is thus the approach which is more likely to provide theoretical support for the hypothesis under consideration.

The two approaches to analysing the relationship between money and expenditure will now be discussed in some detail in order to specify the temporal relationships which may then be translated into a spatial framework.

The Monetarist Approach

In the monetarist model, as outlined by Friedman,² the term 'money' applies to a particular asset or group of assets which performs the function of means of payment, or is very readily transferable into a means of payment. Money is thus defined with reference to specific assets, as contained in the aggregates M_0 , M_1 , M_2 or M_3 (where the subscripts indicate the range of assets included in the aggregate, M_0 being the monetary base). These aggregates are viewed as having stable relationships with each other, determined by the values of stable money multipliers (M_1/M_0 , M_2/M_0 , and M_3/M_0).

The demand for money is an asset demand, in that it reflects the choice as to the proportion of a portfolio of assets to be held in money form, for the purposes of conducting transactions. The choice is thus made with reference to the relative rates of return on alternative assets. On empirical grounds, however, it is concluded that these rates of return only marginally affect the decision on money holdings when compared with the influence of the proxy for expected long-term trend values of wealth, or its return, 'permanent income'.

Since long-term trends in income or wealth are viewed as stable, and the demand for real money balances is a stable function of those trends, the only possible source of monetary disturbance is a change in the supply of real balances. Indeed Friedman explains the existence of the business cycle, being deviations from long-term trends in output, primarily by changes in the money supply on the part of the monetary authorities.³

If the money supply is increased in excess of demand, excess balances are substituted for financial assets, lowering

interest rates and raising the value of wealth, and thus inducing additional expenditure on goods; in addition, a high degree of substitutability of money for goods causes increased expenditure directly. Output and employment increase as individual producers respond to what they perceive as a shift in demand in favour of their products, and as new employees interpret a rise in money wages as a rise in real wages. But as the general price level rises, real money balances fall and must be replenished, real wages fall and nominal interest rates rise. These factors all contribute to the reversal of the initial increase in output and employment. The reversal process, or downturn, may reduce activity below the initial level if expectations again are mistaken, this time with respect to falls in demand for individual products. This cycle then declines in amplitude, unless a further shock occurs in the form of a further money supply change by the authorities.⁴

Without money supply shocks, then, all markets clear if they are perfectly competitive and in the long-run the Classical Dichotomy holds between the money supply which determines the general price level, and the real interest rate which equates planned saving and investment. Money only influences real variables in the short-run. Money's role is that of a vehicle for effective demand, whereby an excess supply of money necessarily is translated into an excess demand for goods. In the long-run, the sole effect of a change in the supply of money is a change in the general price level. But in the short-run, market responses are diverted from long-run trends by false expectations of changes in long-run real effective demand.

While monetarist theory allows for differences in the money-income relationship between economies, these differences are not generally highlighted. More emphasis is placed on supply conditions; if money in this model is to have a differential effect on economies with differing real conditions, then the difference must arise primarily on the supply side. The monetary theory of the balance of payments in its 'global monetarist' form⁵ emphasises the balance of payments as a source of nominal money supply change, in addition to, and counteracting, actions of the monetary authorities. With exchange rates fixed, capital mobility and the 'law of one price' together ensure that any excess demand for money, positive or negative, is met by inflows or outflows of foreign exchange, respectively, rather than changes in the price level. By considering interrelationships between open economies with fixed exchange rates, then, global monetarists suggest that money may have little effect even on the general price level.

The Keynesian Approach

A Keynesian view of money⁶ emphasises changes in the demand for money, rather than its supply, as a major destabilising factor in the economy. Further, these changes in demand relate to changing economic conditions which may be quite independent of actions of the monetary authorities. Keynes viewed the demand for money as an asset demand, determined with reference to expected rates of return on alternative assets. Unlike the monetarist theory of demand for money, the Keynesian theory

emphasises these relative returns rather than the relationship between wealth or income and money as a means of payment.⁷ By raising the possibility that money balances may be held idle, rather than circulating, Keynes suggested that the relationship between money and income (the income velocity of circulation) could change as the demand for idle balances changed - in addition to changes in velocity due to changes in transactions habits.⁸

By stressing the asset functions of money, Keynes viewed money as one of a range of assets, with the distinguishing characteristic of being the most liquid asset in that range. (Liquidity is a measure of the ease with which an asset may be exchanged for a means of payment, without risk of capital loss). While a wide range of assets are liquid in some degree, the most liquid assets must satisfy the following three conditions if they are to perform the functions of money⁹:

1. A minimal elasticity of production. In the case of produced commodities, an increase in demand in general calls forth an increase in quantity supplied. But if money is to act as a store of value, then its value must not be eroded by continual additions to supply. As a corollary, if a potential money-commodity had a high elasticity of production, there would not be strong demand for it as money to induce increased supply. It was suggested above that a central feature of money's role in the Keynesian system arises from the demand for idle balances. Central to this demand is the notion that these balances allow savers to postpone expenditure decisions by acting both as a store

of value and, whenever required, as a means of payment.

Relative to other potential means of payment, then, the elasticity of production must be low.

2. A minimal elasticity of substitution. The 'money' concept must embrace all receptacles of exchange-value with a low elasticity of production, so that the elasticity of substitution with other commodities is low. Otherwise, the supply of one money-commodity need not act as a constraint on real expenditure if substitute money-commodities are available. If substitution with producible commodities were induced by a rise in the value of these commodities relative to money, then an increase in their supply would be induced, reducing their relative value again, i.e. these commodities would not have been a suitable alternative store of value.

3. Low carrying costs relative to liquidity services. The class of money-commodities which have low elasticity of production and low elasticity of substitution must be narrowed down further to those which combine convenience with security of exchange value, or liquidity. Liquidity is an attribute possessed in some degree by many assets, and the liquidity of a particular asset may change with market conditions. During an expansion, markets in most assets are active, so that they are readily exchangeable for a means of payment, and also risk of capital loss is low. During a contraction the liquidity of the same asset is much lower. Money assets are those which combine a very high degree of liquidity with low costs of holding them.

Housing, for example, may be a highly liquid asset during a property boom, but involves high carrying costs, including transactions costs when effecting the exchange into a means of payment. These high carrying costs rule out housing as a money-asset.

Since different assets satisfy these three conditions at different stages of the business cycle, as well as at different stages of development of the financial sector, no one aggregate of particular assets, like M_3 , exactly coincides with the supply of 'money' or 'liquidity' at any one time.¹⁰ Since the liquidity of all assets increases during expansions and declines during contractions, a given nominal amount of money by, say, the M_3 definition understates the supply of liquidity in the former case relative to the latter.

When money is held, in the monetarist model, as a stable proportion of income, so that all money is in circulation financing transactions, a high (and stable) proportion of money balances is made available to investors. The role of the interest rate is then to equate investment plans with plans to abstain from consumption. Once money may be held idle however, as in the Keynesian model, the interest rate becomes a monetary variable, the cost of borrowing money, specifically, rather than savings in any form. As a major factor influencing investment decisions, then, the supply of liquidity relative to demand (of which the interest rate is the indicator) has a direct effect on expenditure plans.

The Keynesian trade cycle¹¹ is driven primarily by changes in the marginal efficiency of capital (MEC), relative to the cost of finance. An expansion commences with an optimistic turn in business expectations, raising MEC relative to the interest rate. As expenditure plans are effected and the multiplier-accelerator process gets underway, expectations become widespread of rising asset prices. Liquidity preference falls, releasing funds for transactions purposes and increasing the velocity of circulation. Liquidity preference is now primarily for transactions purposes rather than as a store of value. But the erosion of the value of real balances as prices rise together with the increasing liquidity of alternative assets further erode the demand for money by any one definition. Offsetting this reduced liquidity preference relative to current income is an increased demand for money to finance future expenditure. The supply of liquidity is not sufficiently elastic to prevent the continued rise in interest rates which eventually chokes off the expansion in output.

During a contraction, however, money holdings revert to idle balances as savers attempt to avoid capital losses. Slackening investment demand reduces the demand for money to finance expenditure. But the increased demand for money as a store of value prevents interest rates from falling as fast as would be the case if money demand were a stable function of wealth. For real investors, then, supply is not at all elastic in a contraction. For both real and financial investors, in addition, the supply of liquidity from any given collection of money assets (and other

assets) falls during a contraction for the same institutional reasons that it tends to rise in an expansion. First, assets which were highly liquid in rising markets become illiquid in falling markets: the range of 'money' assets thus contracts. Second, the financial system expands by means of granting credit. If credit demand contracts because of interest rates remaining higher than expected rates of return on capital then the banking system cannot expand. (The first factor may itself be responsible for an increased demand for credit in the first part of a contraction, on the part of businesses whose assets cannot be liquidated easily to cover continuing costs and falling revenue. But high interest payments cannot be sustained indefinitely by such firms in the face of weakening aggregate demand.)

Thus, in both expansions and contractions, the supply elasticity of money is low enough to constrain output growth. In the expansion, it cannot prevent the eventual interest rate rise which causes the cycle to reach a peak (unless of course the central monetary authority chooses to increase supply to prevent such an outcome). In contractions, falling rates of return on real and financial assets restore the demand for money as a store of value, i.e. to be held as idle balances. But at the same time, the falling demand for credit at going interest rates and the falling liquidity of assets which satisfied store of value functions during the expansion together reduce the supply of liquidity. This low elasticity of supply prevents interest rates falling relative to expected rates of return on real assets, so that planned real expenditure falls further than would have been the case if money were not diverted to idle balances.

Even in the long-run, then, money influences the level of output in the Keynesian model. The more elastic is the supply of liquidity during expansions, and the less the increase in liquidity preference during contractions, the higher will be the level of output throughout the cycle. In turn, these elasticities of supply and demand are strongly influenced by 'real' economic conditions - by expectations as to the level of prices of domestic assets in the short-run, and by the efficiency and stability of the domestic financial system in the long-run.

Conclusion

The hypothesis to be explored here is set in the context of long-run trends of persisting disparities between the income and output levels of different economies.¹² The monetarist approach posits the absence of any 'real' influence of money in the long-run. The Keynesian approach however points towards differences in demand and supply conditions in financial markets in different types of economy, as well as providing a role for money in influencing real economic conditions in the long-run. In considering the possible influence of money on existing real economic disparities, then, the Keynesian theory appears to be the more fruitful.

Nevertheless, an important feature of the monetarist model which is lacking in conventional Keynesian accounts is its recognition of the monetary implications of the balance of payments. In considering financial interrelationships between economies, the factors influencing financial flows between economies are of central importance. The monetarist emphasis on the supply of money from

outside the domestic economy will thus be grafted onto Keynesian domestic monetary theory. In the monetarist model, however, capital flows are 'stabilising' in the sense that they tend to offset destabilising behaviour on the part of the monetary authorities. In a Keynesian model, on the other hand, capital inflows responding to expected returns on assets in different economies can be expected to increase the elasticity of supply of liquidity during expansions, while reducing it during contractions. Capital mobility may thus be expected to exacerbate cyclical swings in output, MEC and interest rates.

A second feature of the monetarist approach to be adopted here is the use of the money concept in the sense of a particular collection of assets (like M_1), rather than in the liquidity sense as an attribute of a shifting range of assets. The reason for this usage is purely practical, in that a stock of money may be measured while liquidity may not. The theory must be expressed in such a way that the empirical material in Part III provides useful information in relation to the theory.

Since the liquidity concept is central to the Keynesian approach, then, the derivation of demand and supply relations in terms of monetary aggregates must take into account the relationship between liquidity and those aggregates under different economic conditions. In the temporal terms of the earlier discussion of business cycles, the liquidity supplied by assets rises during expansions and falls during contractions. If liquidity preference then falls in expansions and rises in contractions, the cycle in the demand for particular money assets must have a much wider

amplitude. The cycles in the supply of particular monetary aggregates are however of lesser amplitude than the cycles in liquidity, the former arising only from cyclical changes in the monetary base and the money multiplier.¹³ In summary, expressing the theory in terms of monetary aggregates will entail larger shifts in demand for money functions and smaller shifts in money supply functions, during the cycle, than if it were expressed in terms of liquidity.

At the same time, the liquidity concept will be retained as an important feature of portfolio decisions. Since the liquidity supplied by given assets differs under different economic conditions, the rate of return calculations which take account of expected capital values will also differ. This applies to real assets as much as to financial assets; the marginal efficiency of investment (MEI) thus also varies as the expected resale value of plant and machinery varies under changing economic conditions.

The purpose of this investigation will be to consider how far this modified Keynesian monetary theory, expressed here in temporal terms, carries over into a spatial framework. In other words, if financial interrelationships between economies enhance expansions but exacerbate contractions, for any one economy over time, do they also enhance the growth of rapidly-growing or prosperous economies but exacerbate the stagnation of low-growth, or depressed economies? Can money then be said to play a part in determining the distribution of real income between different economies?

This spatial, or compositional, approach to considering the role of money is of interest from a variety of perspectives. First, as noted above, the Keynesian theory of money has tended

to understate the extent to which national markets are open, and the implications of that openness for macroeconomic relationships (particularly in the financial sector). Inter-economy financial relationships have been fully incorporated into the monetarist model; it is useful to pursue a parallel enquiry within a Keynesian framework.

Second, Keynes himself emphasised¹⁴ the importance of the composition of macroeconomic aggregates. This emphasis was placed more on the real side than the financial side, although the argument is directly applicable to each. He argued that the size of the income multiplier is determined by the expenditure decisions of agents involved in each round of the multiplier process: these decisions in turn are determined by the particular set of expectations held by each agent at that particular point in time. By extension, money market conditions, and thus interest rates, also are determined by the particular array of expectations at each point in time. This line of reasoning thus is promising in terms of yielding a role for money in determining the distribution of output and employment.

Third, the composition of output and employment is of importance from considerations of equity. The mechanism for promoting equity between nations and between regions affects financial markets, either indirectly by altering expectations, or directly if it takes the form of transfers of funds. In assessing the effectiveness of any mechanism for promoting equity,

then, it is necessary to take into account any secondary effects on output arising from the mechanism's effects on financial markets.

Finally, the role of money has been discussed with respect to interregional and international economic relationships in a way which allows simultaneous application to both contexts. With changing institutional structures within and between countries in recent years, the traditional elements distinguishing regions from nations have become less useful. Factor mobility (particularly the mobility of capital) has increased between countries in the European Economic Community, for example, while the regional problems of individual member countries appear to have been exacerbated by low interregional factor mobility (particularly the mobility of labour). The analysis here, then, will start by considering financial relationships between 'economies', and only later make explicit reference to national and regional institutional structures. Underlying this approach is the view that some general principles may be derived which have similar relevance to nations and regions. Since the institutional structures of individual nations or regions differ, in any case, from one to another, it is less helpful to attempt to generalise from one particular institutional case.

Footnotes

1. Money was given a central role in J M Keynes, The General Theory of Employment, Interest and Money (London: Macmillan, 1936). Money was emphasised less in subsequent Keynesian theory, until the last decade when it has experienced a resurgence. See, for example, A G Hines, On the Reappraisal of Keynesian Economics (London: Martin Robertson, 1971). The reassertion of a central role for money in the economy has been highlighted as the spearhead of 'revolutions' in twentieth century macroeconomics by H G Johnson, 'The Keynesian Revolution and the Monetarist Counter-Revolution', American Economic Review, Vol. 61 (May 1971), pp. 1-14.
2. The following account of Friedman's monetarist theory is taken primarily from the following: M Friedman, 'The Quantity Theory of Money: A Restatement', in M Friedman (ed.) Studies in the Quantity Theory of Money (Chicago: Chicago University Press, 1956), pp.3-21; M Friedman and A Schwartz, 'Money and Business Cycles', Review of Economics and Statistics, Vol. 45 (1963), Supplement, pp.32-64; M Friedman, 'The Role of Monetary Policy', American Economic Review, Vol. 58 (March 1968), pp.1-17; M Friedman, 'A Theoretical Framework for Monetary Analysis', Journal of Political Economy, Vol. 78 (March/April 1970), pp.193-238, and M Friedman, 'Unemployment versus Inflation? An Evaluation of the Phillips Curve', Institute of Economic Affairs Occasional Paper No. 44 (1975).
3. See M Friedman and A Schwartz, op.cit.

4. See M Friedman (1970), op.cit.
5. See H G Grubel, Domestic Origins of the Monetary Approach to the Balance of Payments, Princeton Essays in International Finance No. 117 (June 1976) for a clear account of the relationship between 'domestic' monetarism and 'global' monetarism.
6. The following account of Keynes' monetary theory is derived from J M Keynes, op.cit., supplemented by his later amendments contained in J M Keynes, 'The General Theory of Employment', Quarterly Journal of Economics, Vol. 51 (Feb. 1937), pp.209-223; J M Keynes, 'Alternative Theories of the Rate of Interest', Economic Journal, Vol. 47 (June 1937), pp.241-252, and J M Keynes, 'The "Ex-Ante" Theory of the Rate of Interest', Economic Journal, Vol. 47 (Dec. 1937), pp.663-669.
7. See J M Keynes (Feb. 1937) op.cit. pp.215-216, for a discussion of the role of money as an asset which acts as a store of wealth in conditions of uncertainty.
8. Keynes had earlier, in 1930, explored the velocity of circulation of active balances as a technical relationship, reflecting the composition of activity and thus of transactions in J M Keynes, A Treatise on Money: The Applied Theory of Money (London: Macmillan for the Royal Economic Society 1971), chapter 24. The chapter commences with a discussion of the meaning of the term 'velocity' when some balances are being held idle.
9. J M Keynes (1936), op.cit., chapter 17.

10. This view of money as an attribute of a variety of assets, rather than an exclusive, small collection of assets, was most fully set out in the Radcliffe Report, The Committee on the Working of the Monetary System, Report, Cmnd. 827 (HMSO: London, 1959).
11. See J M Keynes (1936), op.cit. chapter 22.
12. An analytical framework for defining and discussing those disparities is set out in Chapter 4, which is consistent with the monetary analytical framework set out in this chapter.
13. The derivation and use of money multipliers are discussed in Chapter 6 and Appendix 1.
14. See J M Keynes (1936), op.cit., chapter 21 and 'How to Avoid a Slump', The Times, Jan. 11-14, 1937.

Chapter 4. THE NATURE AND CAUSES OF REAL INCOME DISPARITIES

Introduction

The context of discussions of the policy implications of the distributional effects of money (if not the theoretical implications) has been the palpable existence of real spatial disparities. Thus, when we consider the real distributional effects of money, we are considering how money alters (if at all) the existing unequal distribution of real income. While this line of enquiry suggests a mutual causation between money and the real income distribution, nevertheless it is reasonable to suggest that it was some real spatial disparity which initiated differences in monetary conditions, which may then have altered the real disparity. Thus, before considering how real disparities promote monetary disparities, and then how these in turn affect real disparities, we must first consider the nature of these real disparities.

Real income inequality at all levels of aggregation (households, regions, nations) is an incontestable fact.¹ The reasons which may be provided to explain this inequality are however quite diverse. While it is not the purpose here to attempt a full analysis of these reasons, a general view must be taken of the type of cause of inequality and thereby how that causal relationship is affected by inequality of monetary conditions.

This view will be based on the following three principles which will guide the subsequent analysis:

- (i) the persistence of real income disparities is not in general consistent with economies being in equilibrium, nor, necessarily on a path to equilibrium; they are therefore not amenable to general equilibrium analysis;
- (ii) real income disparities between regions are of the same fundamental character as those between nations; the institutional differences between regions and nations are nevertheless significant;
- (iii) the real income level of one region or nation can only be fully explained with reference to real income levels in other regions or nations; because of economic interdependence, the analysis must be context specific.

Before elaborating on these principles, the term 'real income' must be defined more carefully, and its usage justified. It is being used here, according to convention,² as a proxy for level of development (more precisely, the proxy should be expressed as real per capita income).³ The two are not synonymous; per capita income of an appropriate level is a necessary but not sufficient condition for "economic development" of a corresponding level. Two further factors may be judged to be necessary conditions for development:

- (a) a distribution of real income, underlying the regional or national average, which satisfies some social criterion of minimal equity, i.e. a broad

diffusion of the benefits of growth;

- (b) a regenerative economic base, i.e. activity which generates further domestic activity and is able to withstand demand shifts.⁴

In these terms then, oil producing nations which have not channelled funds into local employment and infrastructure development, or have not diversified, are not economically developed, in spite of high per capita incomes.

The per capita real income proxy will be used here, however, in spite of its shortcomings, as the most manageable and most widely used proxy for development. The way in which it is used will nevertheless represent an attempt to bring out the breadth of the concept for which it is proxy.

Equilibrium or Non-Equilibrium Analysis

Observed real income differences between regions and even more so between nations may often be non-marginal in nature. By 'non-marginal' is meant, not susceptible to elimination by marginal factor movements or trade in goods and services. And yet a large body of regional economic theory⁵ and of international economic theory - particularly international trade theory⁶ - uses marginalist analysis. Ohlin,⁷ who has influenced both international trade theory and regional development theory, demonstrated his awareness of impediments to equilibrating forces, so that equilibrium positions may not be fully attained, or may be shifted by external forces. Nevertheless, the primary force

of his theories was that free market forces are equilibrating, responding to marginal price differences. In the international context, the pattern of production and trade is determined by initial endowments of (relatively) immobile factors. International trade would, through the price mechanism, ensure that countries would specialise in production of commodities intensive in their abundant factors. As an extension, the Stolper-Samuelson Theorem demonstrates factor price equalisation (under the customary strict conditions of general equilibrium models).⁸

In the interregional model, it is factor mobility rather than traded goods mobility which preserves equilibrium. Factor mobility between regions responds to marginal factor price differentials and thus eliminates them. Whichever adjustment mechanism is employed, goods or factor mobility, the result is factor price equalisation. Aside from the question of rents on initial endowments, there is no reason to expect anything other than marginal income differences. Total, as opposed to per capita, income will vary as factor supplies vary (exogenously as a result of demographic factors, or endogenously as a result of flows to or from other regions or nations).⁹

In contrast, disequilibrium models, while still expressed with reference to equilibrium, suggest that market forces promote divergence from that equilibrium. Using per capita income levels as a proxy for economic development, "divergence" is defined here as involving lower rates of growth of per capita income in economies with lower levels of per capita income.¹⁰

The major examples of disequilibrium theory are Myrdal's theory

of cumulative causation¹¹ and its further development at the hands of Kaldor,¹² Dixon and Thirlwall¹³ as an economies of scale theory. (Perroux's¹⁴ growth pole theory is also closely related.) According to this theory, regions or nations which, for whatever reason, are already ahead in the development process acquire attributes which generate further development at the expense of the other regions or nations, via backwash effects. Spread effects counteract this trend as demand in the more developed nation or region (the Centre) increases for the products of the other nations or regions (the Periphery).¹⁵ The backwash effects arise from the external economies derived from those activities already in operation in Centre, economies of scale in production, and by capital and labour inflows from Periphery attracted by higher returns in Centre. The forces Ohlin envisaged as equilibrating are here regarded as disequilibrating; the factor movements are marginal but continuous, never achieving factor price equalisation as the movements allow increased growth in Centre and thus increased marginal returns to factors. Kaldor and Dixon and Thirlwall's formalistic developments of the theory in terms simply of economies of scale capture some of the essence, but lose the richness of Myrdal's depiction of the process. Myrdal's theory suggests a general process of divergence in terms of economic development (although he suggests that spread effects may be strong enough among regions in Central economies to promote convergence). Kaldor's theory suggests divergence in terms of per capita income levels.

What is observed in practice is not in general a process of

convergence, nor is it in general a process of divergence. There are periods and areas of both convergence and divergence. Thus, while there are forces encouraging the centralisation of activity and the vicious circle of underdevelopment, there are in most circumstances and on most occasions, forces which prevent the divergence from escalating. These forces range from the economic spread effects as outlined by Myrdal to the socio-political forces, including intervention by international institutions or individual governments with interests (altruistic or otherwise) in preserving economic stability in particular countries.¹⁶ The significance of these non-economic forces means that a closed, deterministic general equilibrium economic model cannot capture the essence of the development or underdevelopment process.

With economies thus being on neither a convergent nor a divergent growth path, the equilibrium growth path (with its equilibrium goods and factor prices) loses its central significance. What is significant rather is the balance of forces which have tended historically roughly to preserve inequalities, somewhat lessening them among regions (of developed nations at least) but increasing them among nations. Analysis which concentrates on the balance of these forces without reference to equilibrium is described here as 'non-equilibrium' analysis. It results in an approach which, while inelegant, nevertheless encompasses the many complexities thrown up by policy experience in both the regional and international contexts.¹⁷

As Balogh suggests in the context of international aid provision,

'[T]he eternal truth in this complex field ...
is that there is no eternal truth.'¹⁸

The Equivalence of Regional and International Disparities

The concept of real inequality has been applied so far to regions in the same way as to nations. This practice requires some justification, since generally the literatures dealing with each are distinct.

Two of the major early influences on current theoretical developments in both fields, as discussed above, used the same tools of analysis for both regions and nations: Ohlin in his book entitled Interregional and International Trade and Myrdal in his book entitled Economic Theory and Underdeveloped Regions, which refers both to subnational and international regions. For Ohlin, the adjustment mechanism differed only to the extent that it relied primarily on factor mobility within countries and primarily on goods mobility between them. Myrdal stresses more the importance of international capital mobility in promoting international divergence. To both, however, the major difference between the two contexts is only in the degree of factor mobility; the underlying principles are the same. For Myrdal, further, the regional polarisation of activity facilitates the international polarisation of activity by centralising the pool of capital to be tapped. Capital is

attracted by the higher returns reflecting economies of scale enjoyed by financial centres. In turn, the less dominant regional and national financial centres act as a conduit for capital flowing into the financial centres enjoying the greatest economies of scale (like London and New York).

Both the subsequently distinct prescriptive bodies of thought on international and interregional development have in general started from the position that development disparities exist and discuss how they may be reduced. The neoclassical branch of the literature views such evidence as proof of market imperfections; increased factor mobility would remove the disparities.¹⁹ The 'Keynesian', primarily disequilibrium or non-equilibrium branch stresses rather either investment, or exports, as the key variable. Thus, in order to promote 'equilibrium' tendencies, means are suggested of altering the direction and volume of either factor or goods mobility, respectively.²⁰

The theoretical framework employed in international development theory is a balance of payments framework, while the regional development literature employs primarily a multiplier framework. The two frameworks in fact have strong similarities. There is of course the foreign exchange constraint associated with international payments but not with interregional payments. The role of this constraint will be pursued in later chapters. But otherwise, regions can have balance of payments 'problems' in the same way as nations if, for example, a new investment project requires increased

expenditure on imported materials and the propensity to import consumer goods out of generated income is high. In the regional context this type of phenomenon is expressed as a low multiplier (high leakage) problem,²¹ while in the international context, the problem is expressed within the balance of payments framework.

A further distinct development of regional theory has been location theory, which analyses the motivation for particular locations of economic activity, i.e. what governs the locations which mobile factors choose. This branch of theory is becoming progressively more relevant to the international context with the growth of multinational corporations. Rather than national enterprise which chooses location within national boundaries, multinational corporations choose locations on a world-wide basis.²² Institutional change of this form is thus further reducing the significance of national boundaries.

In the context of non-equilibrium analysis, the role of institutions and institutional change was stressed as modifying or amplifying the effects of market forces on real income distribution. If there is a fundamental distinction between regions and nations it is the institution of the nation-state. National institutional (as opposed to practical) barriers to factor mobility differ from nation to nation; the regional barriers are of a more practical nature. The distinction is still not clear-cut however, when some major nations (the U.S. and Germany) have federal structures which in effect put up

subnational barriers (in the form of different tax policies, provision of services, etc.), and when some major nations (the E.E.C. countries in particular) are undergoing economic integration to reduce national barriers.

The outstanding institutional factor is the political will to reduce developmental differences. Myrdal argues that international divergence is likely to be stronger than regional divergence, and developing country regional divergence stronger than developed country regional divergence because of differences in the relative strengths of (economic) spread effects. Others²³ confirm Myrdal's hypothesis, and explain it in terms of an equity-efficiency preference function maximised subject to an equity-efficiency trade-off constraint, both of which differ by type of country or region. For nationalistic political reasons, "efficiency" is generally given higher priority relative to equality between nations than between regions. Further, it is postulated, by Richardson²⁴ for example, that the equity-efficiency trade-off relation is less favourable the lower the level of development in the sense that a relatively larger equity sacrifice is necessary in order to achieve an increase in output.²⁵

These trade-off differences represent differences in degree between regions and nations, regarding the policy choice on redistribution and its opportunity cost. The difference in kind rests on the mechanisms by which redistribution may take place. Within a country, tax and current expenditure policies are available in addition to the fiscal transfer and capital expenditure policies

which are also available to international bodies. Again the distinction is weakened by the formation of country groupings like the E.E.C. with goals of centralised fiscal decision making. However, the combination of the greater will and greater ability to effect redistribution is an important stabilising factor among regions compared with the international situation.

Interdependence

Economic development is a relative concept in the sense that development or underdevelopment may be measured relative to some average, rather than absolute, level. (Using per capita income levels, degree of development would be measured by an economy's per capita income ranking.) It is also relative in a much more fundamental sense. The process of development in one region or country is conditioned by the process and stage of development of regions or countries to which it has economic ties. Thus Britain's development from a given real income level in the nineteenth century, for example, was of a quite different kind from development of countries now at that same income level.

Myrdal's analysis emphasises the dynamic relationship between Central regions and countries and Peripheral regions and countries. It is only because the Centre is prosperous and accessible that capital and labour move out of the Periphery, factors which would otherwise provide the basis for Periphery's growth. Further, trading relations which are based on comparative

advantage encourage specialisation in Centre in manufacturing and services, while Periphery specialises in (or may not diversify from) primary production. The different income and price elasticities of demand for the output of the two types of region condition the stability and growth potential of demand and thus of output growth.²⁶

This polarisation of economic structure has two major features. One is the dual nature of markets, particularly factor markets, in the Centre and the Periphery. This dualism takes many forms, including different social structures, different forms of employment requiring markedly different types of skills, different financial structures, and different income levels and consumption patterns. Since factor returns are higher in the central areas, insofar as the factors are comparable,²⁷ this dualism encourages factor flows into Centre, but discourages flows into Periphery.

Second, the 'interdependence' between the two types of region or nation is not symmetrical. The greater 'dependence' of Peripheral regions or countries arises from the fact that the crucial decisions are made in the Central regions or nations,²⁸ and stems from a variety of factors:

- (a) the location in the Centre of central government, business head offices, the business service sector (insurance companies, banks, etc.) and the majority of growth industries;

- (b) the lesser degree of economic diversification in Periphery, rendering output sensitive to demand swings and shifts originating in Centre;
- (c) the positive association between wealth and economic power; given initial income disparities, market power is stronger in Centre than Periphery; this power confers benefits to Periphery in the form of strong demand for primary products, but also renders Periphery vulnerable to taste or technological changes;²⁹
- (d) asymmetry in adjustment; Peripheral regions or countries are likely to have to adjust more speedily to payments imbalance (particularly deficits) and also more likely than Central regions or countries to resort to income adjustment.³⁰

This last point is one to which we will return because of the role of financial markets in encouraging this asymmetry. Again, this form of dependency confers benefits as well as costs to the Periphery. It is argued by some that the greater pressures on deficit countries to adjust are necessary in order to encourage adoption of responsible economic policies, while others argue that countries in surplus could, to the benefit of all, take on a larger share of the adjustment burden.³¹

The opposite thesis is made in the regional case, by McCrone:³² that the adjustment burden is borne by the Central regions (in surplus) who provide income transfers to balance

regional payments (although reverse flows resulting from the transfers offset the burden to some extent). This argument does not however take account of the possibility that deficit regions (generally the Periphery) are at the same time undergoing income adjustment. The common perception that regions do not have balance of payments problems to which they must adjust is only true in the sense that countries under the gold standard system did not have payments problems. The financial manifestations of regional payments imbalance will be pursued in Chapter 6.

Conclusion

Regional economies and international economies are subject to two sets of forces resulting from their economic interdependence with each other: those which increase demand and production capacity and promote growth and those which do the reverse. While the former tend to be stronger in developed, industrialised economies and the latter in primary-producing developing economies, institutional reactions modify tendencies towards divergence.

Within nations, the institutional framework to prevent divergence tends to be more effective than at the international level. On the other hand, there are more barriers at the international level than the regional level to the factor and goods movements which promote growth in the Centre 'at the expense of' the Periphery. The regional/international differences are more of degree than of kind; regions and nations operate along a continuous spectrum of combinations of tendencies to growth and decline and of institutional safeguards.

In order to simplify the analysis which follows, however, attention will be restricted to regions and nations at either extreme of the spectrum. The shorthand terms Centre and Periphery will be used to represent these extremes. If it can be shown that money affects these two types of economy very differently, then it can be imputed that the intermediate type of economy will occupy some middle ground. It is not being suggested that the world may actually be dichotomised into prototype Centres and Peripheries. Rather, the use of a simplified 'model', in this sense, allows the drawing of conclusions as to tendencies.

Reflecting the discussion here of the development process, the methodology used will be designed to represent the short-run and long-run interdependence of economies at different stages of development. This interdependence, and institutional reactions to it, will be shown as causing both convergent and divergent tendencies which are best studied in a non-equilibrium context. While this convergence and divergence are expressed henceforth in terms of per capita income levels, what is intended is the much broader concept of relative stages of economic development.

Footnotes

1. See Tables 9.1, 9.3, 9.12 and 10.1.
2. See, for example, G M Meier, Leading Issues in Economic Development: Studies in International Poverty (Oxford: Oxford University Press, 1970) pp.7-9, and A P Thirlwall, Growth and Development: with Special Reference to Developing Economies, second edition (London: Macmillan, 1978) pp.20-23.
3. Since real per capita income is a proxy for level of development, the rate of change of real per capita income is employed as a measure of rate of development; a negative correlation between level and rate of change indicates convergence of development levels, while a positive correlation indicates divergence.
4. See, for example, Thirlwall, op.cit. These two desirable features of development are not necessarily compatible; the development of a strong, diversified economic base may be achievable only at the cost of foregoing income redistribution or indeed changing distribution even more in favour of high savers. Nevertheless, without either feature in some degree (which of course is not readily quantified) development cannot be said to have been achieved.
5. See S Holland, Capital versus the Regions (London: Macmillan, 1976) chapter 1, for a review of general equilibrium theories of regional balance.
6. This is evident from a glance at any standard international trade theory textbook. See, for example, I Steedman (ed.), Fundamental Issues in Trade Theory (London: Macmillan, 1979).

7. B Ohlin, Interregional and International Trade, revised edition (Oxford: Oxford University Press, 1967).
8. The poor performance of the Heckscher-Ohlin theorem and the factor-price equalisation theorem, when subjected to empirical testing, is discussed by M Blaug, The Methodology of Economics, or how economists explain (Cambridge: Cambridge University Press, 1980), pp.216-223.
9. The only remaining explanation for persistent differentials is, then, differing degrees of technical change, increasing productivity in one region faster than another. See H Armstrong and J Taylor, Regional Economic Policy and its Analysis (Oxford: Philip Allan, 1978), pp.22-34.
10. The processes of convergence and divergence are most easily identified by relatively high and low rates of growth, respectively, of real per capita income in the developing countries. In the broader context of economic development, convergence and divergence refer to other factors in addition to income, such as trends in the dispersal of benefits of growth throughout the economy, and in diversification of the economic base.
11. G Myrdal, Economic Theory and Under-developed Regions (London: Methuen, 1964).
12. N Kaldor, 'The Case for Regional Policies', Scottish Journal of Political Economy, Vol. 17 (Nov. 1970), pp.337-348.
13. R Dixon and A P Thirlwall, 'A Model of Regional Growth-Rate Differences on Kaldorian Lines', Oxford Economic Papers, Vol. 27 (July 1975), pp.201-214.

14. A discussion of growth pole theory, deriving from Perroux's work, is to be found in H W Richardson, Regional Growth Theory (London: Macmillan, 1973), pp.78-86.
15. These terms, 'The Centre' and 'the Periphery', were first introduced by R Prebisch, The Economic Development of Latin America and its Principal Problems (New York: Economic Commission for Latin America, U.N. Dept of Economic Affairs, 1950).
16. Myrdal, op.cit., pp.29-31, discusses "non-economic factors" such as social infrastructure and local custom, but only in terms of adding to economic factors rather than counteracting them. The role of aid in promoting political and economic stability (in an international context) is discussed by T Balogh, (Aid and World Instability', in M Nash (ed.), Essays on Economic Development and Cultural Change in Honor of Bert F Hoselitz, Economic Development and Cultural Change, Vol. 25 (1977), Supplement, pp.376-390.
17. Myrdal, op.cit., pp.9-13, provides a critique of the use of the equilibrium concept. But his subsequent cumulative causation theory is more like a dynamically unstable equilibrium theory than a 'non-equilibrium' theory.
18. Balogh, op.cit., p.380.
19. The confidence demonstrated in capital markets to promote economic development once freed from government interference (including excessive reliance on money supply growth) is stressed by R I McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution , 1973) and E S Shaw, Financial

- Deepening in Economic Development (London: Oxford University Press, 1973). Even if this beneficial role of capital markets is accepted 'in equilibrium', the transition to that state need not be as stable as portrayed by McKinnon when discussing the formation of monetary unions in R I McKinnon, Money in International Exchange: The Convertible Currency System (Oxford: Oxford University Press, 1979).
20. While the two variables, investment demand and export demand, are often treated as alternatives, the two will be closely related if the export sector is relatively large, thus accounting for a large proportion of investment. This 'common cause' is central to M von N Whitman, International and Interregional Payments Adjustment: A Synthetic View, Princeton Studies in International Finance No. 19 (Princeton: International Finance Section 1967). Nevertheless, while export growth may be necessary to prompt new investment demand, it may not be sufficient; thus investment demand would be the crucial variable.
21. See T Wilson, 'The Regional Multiplier - A Critique', Oxford Economic Papers, Vol. 20 (Nov. 1968), pp.374-393, where the significance of imported inputs to new industrial developments is stressed.
22. The role of multinational companies in the context of economic disparities is discussed by Holland, op.cit. pp.56-59. While pointing out the benefits of incoming enterprise for backward regions, Holland discusses the drawbacks in terms of the limited range of industries which can be mobile and the costs associated with

centralised decision-making in head offices located in what he calls the "meso-economic sector" in the Centre.

23. See, for example, J G Williamson, 'Regional Inequalities and the Process of National Development: A Description of the Patterns, Economic Development and Cultural Change, Vol. 13 (July, 1965, Part II), pp.3-84, and H W Richardson, 'Aggregate Efficiency and Interregional Equity', Paper presented to the Regional Science Symposium, University of Groningen, Netherlands (Sept. 1977).
24. Tbid.
25. That equity and efficiency are conflicting goals in a dynamic context is not altogether straightforward. It can be argued that promotion of more balanced regional labour market conditions would improve the national inflation unemployment trade-off, allowing the equity-efficiency trade-off to shift out. Thus income equalisation through the labour market allows lower unemployment for a given inflation level, and thus greater efficiency for a given system of income transfers. This argument is presented by B Higgins, 'Trade-off Curves and Regional Gaps', in J N Bhagwati and R S Eckaus (eds.), Development and Planning: Essays in Honor of Paul Rosenstein-Roden (London, George Allen and Unwin, 1972).
26. Kaldor, op.cit., pursues this argument, postulating a greater degree of price flexibility among Peripheral industries than Central industries.
27. Labour is not in fact homogeneous, particularly when comparing labour in the primary industry of Periphery with that in the

manufacturing and service industry in Centre. Nevertheless, the large wage differentials associated with that non-homogeneity attract labour to Centre. Unless Centre has unlimited demand for labour, many of the immigrants from Periphery become urban unemployed. See Thirlwall, op.cit., pp.29-33.

28. This dependence relationship is not strictly a spatial phenomenon, since it may also be used with reference to economic relationships within a very small area. The concept of dependence is notoriously difficult to pin down. It is nevertheless a useful descriptive and prescriptive concept (rather than an analytic tool). Indeed it underlies the current North-South debate. See, for example, W Brandt (Chairman), North-South: A Programme for Survival, Report of the Independent Commission on International Development Issues (London: Pan, 1980).
29. The OPEC countries are a case in point. While the oil-producers can wield market power in the short-run, in the long-run they are dependent on Western oil consuming nations not finding an alternative source of oil or substitute for oil, and not being successful in curtailing energy demand. The only way of reducing that dependency in the long-run is to use the proceeds of oil sales to diversify the local economies, i.e. to undergo economic development.
30. An interesting account of just this disparity of adjustment practices in the context of developed and developing countries under the late-nineteenth century gold standard, is found in R Triffin, 'The Myth and Realities of the so-called Gold Standard', reprinted in R N Cooper (ed.) International Finance (Harmondsworth: Penguin,

1969), pp.38-61. This analysis is directly applicable to regions (which cannot use the exchange rate mechanism). Exchange rate flexibility in any case is less useful for developing countries than developed countries since the former generally invoice their international trade in major foreign currencies. (See McKinnon (1979), op.cit., pp.72-77.)

31. A debate to this effect took place in the pages of The World Economy. See W M Corden, 'Expansion of the World Economy and the Duties of Surplus Countries', The World Economy, Vol. 1 (Jan. 1978), pp.121-134 and J Williamson, 'Don't Surplus Countries Have Obligations?' The World Economy, Vol. 1 (Oct., 1978), pp.419-426.
32. G McCrone, 'The Determinants of Regional Growth Rates', in J Vaizey (ed.), Economic Sovereignty and Regional Policy (Dublin: Gill and Macmillan, 1975), pp.63-79.

CHAPTER 5: A SPATIAL THEORY OF DEMAND FOR MONEY

Introduction

Given that regions and countries are, at any point in time, at different stages of economic development, we now wish to consider how their financial conditions differ. This chapter addresses the question of how demand for money differs with level of development and short-run economic conditions, while the next will consider supply differences.

The purpose is to provide a general spatial theory of demand for money, applicable to both regions and nations.¹ The theory will therefore be developed in general terms first, then, in the following sections of the chapter, interpreted in the particular contexts of regions with a common currency and nations with differing currencies. The theory will draw on temporal analysis of individual economies at successive levels of development; this can be applied to a certain extent to a group of economies at differing stages of development at one time. But considerable significance in the spatial context will be given to the interdependence of these economies, and in particular their financial institutions. This adds an important dimension to the traditional temporal analysis. (It is of course already present in open economy theories of the demand for money.)

The analysis is made more complex by the institutional nature of money itself. Money is any asset which satisfies the following requirements:²

- (i) low elasticity of substitution; there is no close substitute which also performs the function of money;
- (ii) low elasticity of supply; money has a stable own rate of interest;
- (iii) it carries a liquidity premium which is high relative to carrying costs.

Different assets will satisfy these requirements in economies at different stages of development. As a general rule, the group of assets which may be defined as money is broader the more advanced the economy. Thus, notes and coin may be the only acceptable means of payment in a rural economy remote from financial centres, while cheques and credit card payments are also acceptable in urban centres.³

But the interdependence of economies means that the relevant range of money assets in less advanced economies is conditioned by financial innovations in more advanced economies. Thus money instruments issued in developed economies are made available to, or imitated by, developing economies; these instruments would not have been available to the developed economies at similar, earlier stages of development. The difference between the range of assets demanded as money as one economy's financial system develops, therefore, can be expected to be greater than the difference between the range of money assets for economies at different levels of development at the same time.

Studies which compare the national demand for money functions of developed and developing countries suggest interest inelasticity

in the latter because of the relative absence of alternative interest-bearing liquid assets.⁴ This evidence need not however imply that demand for money in developing economies is only a transactions (and precautionary) demand while developed economies also have a (speculative) asset demand.

While Keynes expressed speculative demand as a function of the interest rate in the General Theory,⁵ the speculative motive was intended, or can be interpreted, to represent a much broader concept relating to uncertainty about the future value of all assets.⁶ This interpretation is supported by Keynes' subsequent elaboration in his 1937 Quarterly Journal of Economics article,⁷ where he stated:

'Our desire to hold money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future ... the possession of actual money lulls our disquietude.'⁸

While speculative demand for money in this broader sense differs to some degree in form and consequences depending on the availability of alternative liquid assets, nevertheless it is equally applicable in principle to economies at all levels of development. The nature of uncertainty differs with the structure of the economy, but it is present in all economic structures in some form and requires an outlet in the form of money.

On these grounds, the demand for money will be analysed on a common basis for economies at all stages of development. Following convention, demand for money will be analysed first with respect to the transactions (and precautionary) motive, and then

with respect to the speculative motive. Actual desired holdings of course reflect a simultaneous application of these motives.

Transactions Motive

Money is demanded for the purpose of making expenditures on goods and services and on real and financial assets. This is defined as the transactions motive. In contrast, the speculative motive refers to money held to postpone making actual expenditures for an indefinite period of time. The timing of decision-making is important: money is required before expenditures are made. (This element of demand for money for planned transactions is called the 'finance motive'.⁹) Thus the transactions motive refers to planned as well as actual expenditures; these plans may be thwarted between the demand for money being expressed and the planned date of expenditure. In general, planned expenditures may be classified as regular, recurring expenditures which can be predicted accurately on the one hand, and discretionary irregular expenditures which are subject to decision-change, on the other. The precautionary motive for demanding money holdings refers to those expenditures for which plans cannot be made but for which money may be required unexpectedly, with some probability. This motive is traditionally subsumed in the transactions motive, based on the presumption of a roughly proportional relationship between the two.¹⁰

The question at hand is, then, how desired money holdings for transactions (and precautionary) purposes differ by level of economic development. Since per capita income is being used as a proxy for level of development, then the question becomes how per capita transactions demand for money varies with per capita income level. The ratio of money stocks to income flows can be viewed as the multiple of two ratios: between money stocks and transactions flows, and between transactions flows and income flows. The first refers to the efficiency of the financial system and the second to the degree of specialisation and sophistication of the economic structure.

(a) Transactions Velocity of Money

The value of transactions made on the basis of a money stock is a velocity measure. The tendency for this velocity to increase with per capita income was noted by Fisher, in the context of a cross-section of individuals:

'It seems to be a fact that, at a given price level, the greater a man's expenditure the more rapid his turnover; that is, the rich have a higher rate of turnover than the poor. They spend money faster, not only absolutely but relatively to the money they keep in hand.'¹¹

He noted a similar tendency over time for a nation as a whole:

'We may infer that, if a nation grows richer per capita, the velocity of circulation of money will increase.'¹²

and also to a cross-section of regions:

'... an increased trade in the southern states, where the velocity of circulation of money is presumably slow, would tend to lower the average velocity in the United States, simply by giving more weight to the velocity in the slower portions of the country.'¹³

This positive relationship between velocity and per capita income results from two related factors:

- (i) technical economies of scale in financial transactions;
- (ii) increasing opportunity cost of holding money with size of money holdings, or economies of scale in portfolio investment.¹⁴

The first factor is most commonly associated with Baumol,¹⁵ referring to economies of scale arising from fixed brokerage costs of shifting money in and out of alternative financial assets. At a more aggregative level, economies of scale arise from higher degrees of intermediation. The greater the development of a diversified financial structure, the lower the costs of transferring money into assets whose terms coincide with individual agents' gaps between receipts and planned expenditures. Since the degree of intermediation is in general a positive function of economic development,¹⁶ economies of scale in transactions balances are enjoyed as per capita income increases.

Baumol's analysis has been adapted to take account of increasing returns to scale in the investment of surplus cash balances, i.e. where the opportunity cost of holding money is an increasing function of money balances.¹⁷ Again this phenomenon may be generalised to an aggregative framework: the process of intermediation is generated by competitive attempts to reap increased returns to financial assets by innovating with new financial instruments. It is in the nature of a financial system to operate under institutional constraints; it is the inelasticity of supply in particular which allows a commodity

or instrument to continue to be used as a money. Financial innovation is thus prompted by the constraining power of central monetary authorities on the money supply, and thereby on profits.¹⁸

The process of innovation is uneven, responding with a ratchet effect to increased costs and economies of scale. Kindleberger analyses the role of financial economies of scale in a spatial framework in the context of the formation of financial centres.¹⁹ Indeed, the temporal phenomenon of increasing economies of scale in performing money transactions, allowing, and encouraged by, increasing returns to scale in financial investment of freed-up money balances as economies develop, may also be applied spatially, to economies at different stages of development at any one time.

Certainly, the innovations in transactions and intermediation in the financial centres within countries, and internationally, are available in some sense to other regions and countries in a way which is not the case in a temporal framework. Nevertheless, the degree of availability is conditioned both by the smaller scale of transactions and investments among agents in lower-income areas, and also by costs associated with distance from the financial centre. Thus, for instance, the scale of transactions conducted by small, rural business precludes enjoyment of economies of scale and in any case the return on alternative assets is lowered by the costs of acquiring them from the financial centre (these costs include such items as information costs and transportation costs).

Further, the main motivation for innovation arises within the financial centres where profit constraints are most keenly felt; there is generally a lag between availability of innovations to large, centrally-located clients and to those in remoter regions or nations. At the household level, for example, the widespread use and acceptability of credit cards has only gradually spread out from financial centres.

In a spatial context, the principle of increasing velocity of money balances with increasing per capita income must be modified to take account of the incidence of national and international transactions. Large corporations, for example, conduct some of their financial business not only in the national financial centres, but also in international financial centres. For these firms themselves, differential degrees of financial development are of diminished relevance, but not so for the economies involved. The fact that small, locally-based business is dependent to a large extent on local financial conditions, as on the local operations of multinational business, will have strong implications for the economic structure of an economy (particularly the proportion of activity conducted by large businesses operating in a number of economies). With this qualification in mind, the simplified conclusion will be retained that transactions velocity (financial efficiency) is a positive function of per capita income.

(b) The Transactions:Income Relationship

So far, only the relationship between demand for money and planned transactions has been considered. In order to establish a relationship between demand for money and per capita income, the relationship between money transactions and income must now be considered.

Monetisation itself is generally associated with increasing per capita income, so at this stage of development there is a clear positive relationship between money transactions and per capita income. Then, as development proceeds, the structure of the economy changes in such a way that transactions per unit of income are likely to increase. As production processes become more complex and specialised, the number of transactions involved in producing final output increases. Further, as the financial sector itself develops, intermediation involves an ever-increasing value of transactions which only adds to final output to the value of profits of the financial sector. Then, as an economy reaches maturity, the relative increase in transactions per unit of output can be expected to decelerate, at least on the production side if not in the financial sector.

In summary, then, the income elasticity of transactions is greater than unity at low levels of development, but falls as development proceeds. The elasticity can be expected to fall below unity, except where financial transactions growth is at a rate which offsets the decelerating trend in 'real' transactions, because of the growth of a financial centre.

What has been hypothesised here, then, is that the efficiency with which money is used increases with per capita income, but also the uses to which money is put also increases. The first factor suggests decreasing demand for transactions balances with per capita income, and the second an increasing demand. It has already been suggested that much of the efficiency increase is a supply response to demand pressures on a growing financial structure. Thus it seems plausible to conclude that, while transactions demand for money increases relative to per capita income as development proceeds, this increase will be gradually dampened by the increases in financial efficiency which it induces. In spatial terms, transactions demand for money will be higher relative to income in more developed regions or countries than in poorer regions or countries, but the gap narrows as both proceed along the per capita income scale.

These two opposing tendencies can be represented mathematically by a quadratic function which shows a rate of increase in demand for money relative to income which falls as per capita income rises. The independent variable is expressed in terms of actual per capita income plus any expected (positive or negative) change in that income to capture the finance motive. 'Money' here refers to a particular collection of money assets, such as M_1 or M_3 .

$$\frac{M_t^d}{Y} = a + b\left(\frac{Y + \Delta Y^E}{N}\right) - c\left(\frac{Y + \Delta Y^E}{N}\right)^2 \quad (5.1)$$

where M_t^d = transactions demand for money
 N = population
 Y = nominal income
 ΔY^E = expected change in Y (within one period, say a quarter)
 a, b, c = non-negative constants

The value of the coefficient \underline{b} , as the multiple of the expected per capita income level, must be considerably larger than the coefficient, \underline{c} , of the square of that level, if the function is to have any positive slope. The function is expressed statically, in terms of levels, in order to allow comparison by per capita income level. Thus equation (5.1) may represent both the long-run demand function for one economy, and a cross-section over different economies at different per capita income levels at one point in time (although incorporating expectations at that point in time).

Speculative Motive

As suggested earlier, the speculative motive for demanding money has relevance to all economies. It ranges from the result of the sophisticated calculations of a financier forecasting future market trends to a peasant farmer's prognostications as to the next year's harvest. All economic agents must take actions now with respect to their portfolios on the basis of an assessment of the future in which they have more or less confidence and which turn out to be more or less correct. Money is the primary asset held until expectations as to the future values of other assets warrant their purchase. (The major exception is a situation of

high rates of inflation where some real assets may be better stores of value than money and also be highly liquid. But in such situations these assets in effect become 'money', satisfying Keynes' three conditions.)

Keynes' analysis stressed the choice between money and other financial assets rather than real goods, although his own speculations in the wheat market for King's College, Cambridge,²⁰ demonstrate that the line cannot so clearly be drawn when titles to real goods are highly liquid. In general, where the degree of financial intermediation is high, financial assets will tend to be closer substitutions for money as depositories of wealth than real assets. For economies with little intermediation, the substitutability with real assets will, of necessary, be stronger.²¹

The principle is in any case the same. If the relative value of (financial or real) assets is expected, with confidence, to rise, then speculative money balances will be run down or become negative in order for the expected capital gain to be reaped. If asset values are expected to fall, then speculative balances will be built up to avoid capital loss. The effect will be stronger the greater the confidence with which the expectations are held.

The effect of pessimistic expectations in developed economies with developed financial structures can be extremely powerful. The complexity of the financial system allows money balances to remain 'idle' in financial circulation, while demand for financing new investment goes unsatisfied. Speculative demand overrides transactions demand with respect to planned expenditure in such a way that plans cannot be met, which could have been met if all money balances were available for real expenditure.

In developing economies, the situation is rather different where financial intermediation is not well developed. Here, the potential investors and the holders of speculative balances are often the same agents. Transactions demand for planned expenditure usually cannot be met by financial intermediation; the liquid balances must be built up by the investor himself. Thus the finance motive operates over a long period until the planned time for expenditure.²² If expectations are then optimistic, the expenditure is made and speculative demand is low. If expectations are pessimistic with respect to future income streams, the expenditure will not be made, the balances being retained as 'speculative balances'.

The situation is modified for developing regions and developing countries which have access to financial intermediation in neighbouring developed regions or nations. Then alternative financial instruments are in fact available as substitutes for money for holding wealth. (The degree to which intermediation may also be relied upon for credit to finance planned expenditures will be considered in the next chapter.) Greater distance from the financial centre limits the extent to which speculation will be possible as between different financial securities issued in the centre, in comparison with agents actually operating in the centre. Nevertheless, speculation will occur as between assets issued in the developing region or country, those issued in the financial centre, and money. Pessimism as to the future value of local assets will encourage holding of financial centre assets, and institutional

barriers with respect to operating in these assets will encourage the holding of money. These institutional barriers range from time lags due to the postal system or necessity of employing a centrally-located broker, to problems of speedy information gathering when the agent is remote from the coterie of those operating on-the-spot in the financial centre.

Other things being equal, then, if lower per capita income is associated with lesser degrees of intermediation, 'speculative' demand for money will on average be relatively higher in lower per capita income areas. This results from the greater uncertainty attached to holding non-money financial assets. The greater uncertainty arises with respect to locally-issued assets because of the relative thinness of the market, and with respect to assets issued in the financial centre because of the problems associated with remoteness from a market. Fluctuations in speculative balances may be higher in financial centres where the volume of financial transactions is high. But on average, relative to income, demand for these balances is unlikely to be higher than in Peripheral economies.

As with transactions demand, this conclusion must be modified to the extent that major agents in the developing regions and countries have direct access to the central financial markets. Nevertheless, this factor simply suggests a greater preference for centrally-issued securities, rather than money, when confidence in locally-issued securities is reduced. It will be argued in the context of money supply discussions in the next chapter that this phenomenon has consequences for the developing region or country

similar to asset-switching simply into money - but has beneficial consequences for the developed region or country housing the financial centre.

Finally, the relative predilections for optimism and pessimism must be considered in regions or countries at different per capita income levels. Generalisation is only possible to a certain extent. Given the interdependence of financial markets, optimism or pessimism are only relative terms with respect to any one region or country. Relative pessimism with respect to asset prices in one developed country will encourage a shift into money and into the assets of other developed countries whose asset prices are expected to fare relatively better.

But, insofar as divergent tendencies are operative between less developed regions and nations and more developed regions and nations there will be a higher incidence of pessimism in the former and of optimism in the latter, i.e. on average a greater demand for assets in liquid form in the former than in the latter (relative to income). It was suggested in chapter 4 that while some forces (primarily 'pure' market forces) tended to promote divergence, there is a, more or less, continuous institutional adaptation (particularly by governments) to this divergence which inhibits it. Thus, any confidence in the stabilising power of these adaptations will modify market estimates of future asset values and thus divergent trends in liquidity preference. Further, any downward flexibility in money wages and exchange rates in the case of countries, may act to reverse expectations as to rates of return on locally-employed capital.

Many 'institutional adaptations' by the public sector consist of offsetting money supply movements, either exogenous (discretionary) or endogenous (built into the existing institutional structure). Thus speculative money demand is partially a function of money supply conditions. Full accommodation of this factor is not possible in a closed, deterministic economic model. Partial accommodation is allowed by means of encapsulating institutional responses in shift factors. While unsatisfactory, this method will be employed below (in equation (5.2)).

The speculative demand for money is, then, a negative function of the expected value of other assets. This is conventionally represented by a rate of interest, the inverse of the value of financial assets, such as bonds, which are close substitutes for money.²³ The more integrated are financial markets, the more uniform will be the relevant interest rates among regions and among nations. For simplicity then, we assume that that portion of speculative demand which responds to expected values of nationwide, or international, securities can be expressed as a negative linear multiple, $(-f)$, of a uniform rate of interest, \underline{i} . Because of the greater proximity to capital markets, it might be reasonable to suggest that residents of more financially-developed economies respond more to interest rate movements than residents of financially-undeveloped economies, so that \underline{f} may differ between economies, being higher at higher levels of financial development.

Further, \underline{f} may even be negative for economies which have a heavy reliance on credit. While an increase in interest

rates discourages borrowing (the substitution effect), increased borrowing may be necessary to finance increased interest payments (the income effect).

But speculative demand for money responds also to changes in expected values of other assets than national or international securities, particularly where there is not ready access to markets in these securities. The expected value of all assets is a positive function of the expected level of income from those assets. If income is expected to fall, then the need to liquidate assets to make up the shortfall rises. In order to avoid capital loss once capital values weaken, the expected fall in income encourages attempts to hold assets in relatively liquid form, which may mean in the form of national or international securities (rather than local securities, or real capital). Similarly, if incomes and asset values are expected to rise, residents will be prepared to 'go illiquid' in order to reap capital gains. Speculative demand, then, is a negative function of expected income levels.

Finally, the expected value of local assets is conditioned, not only by market forces, but also by intervention by the public sector. If income is expected to fall in a region or country, the public sector is likely to respond in some degree to offset the expected trend, either by supplying finance directly, or by implementing measures to increase incomes. On the basis of past experience of such measures, residents will modify their demand for money accordingly. If the public sector, or institutional response, is represented by G (which has a positive value when the

intervention is designed to increase incomes), then speculative demand for money is altered as a negative linear multiple, $(-g)$, of G . It is assumed that downward price and wage flexibility are insufficient to eliminate swings in expectations, particularly of decline in output and employment.

Combining these elements, speculative demand for money may thus be characterised as follows, in static form, again normalising income by population level:

$$\frac{M_s^d}{Y} = d - e\left(\frac{\Delta Y^E}{N}\right) - fi - gG \quad (5.2)$$

where:

- M_s^d = speculative demand for money
- i = interest rate
- G = government response to $\frac{\Delta Y^E}{N}$; $G = G\left(\frac{\Delta Y^E}{N}\right)$, $G' < 0$.
- d, e, g = positive constants
- f = positive constant for Central economies, may be negative for Peripheral economies.

The constant term, \underline{d} , reflects the relatively greater tendency for low income economies to hold 'speculative' balances because of poorer information and market access. (The value of \underline{d} will be higher relative to income the lower the income level.) Even without an expected change in income ($\Delta Y^E = 0$), there will be some speculative demand because there will never be absolute certainty that a negative income change will not occur. The nature of the institutional response, to changes in income expectations, G , will be considered in more detail in the next chapter. The coefficient, \underline{e} has a higher absolute value than the coefficient \underline{b} in equation (5.1), since \underline{e} is the coefficient of a change in level and \underline{b} the coefficient of the level itself.

A Cross-Section Demand for Money Function

Taking together the transactions and speculative demand for money functions, adding equations (5.1) and (5.2), the total demand for money function becomes:

$$\frac{M^d}{Y} = (a+d) + b\left(\frac{Y+\Delta Y^E}{N}\right) - c\left(\frac{Y+\Delta Y^E}{N}\right)^2 - e\left(\frac{\Delta Y^E}{N}\right) - fi - gG \quad (5.3)$$

or, equivalently, as a quadratic function of Y/N :

$$\begin{aligned} \frac{M^d}{Y} = & [(a+d) - (e-b)\frac{Y^E}{N} - c\left(\frac{Y^E}{N}\right)^2 - fi - gG] \\ & + (b-2c\frac{Y^E}{N})\frac{Y}{N} - c\left(\frac{Y}{N}\right)^2 \end{aligned} \quad (5.4)$$

This function may be depicted graphically, as in Figure 5.1, where the horizontal axis measures both actual and expected per capita income levels. The demand for money is determined by the actual income level, plus expected changes, i.e. by the relationship between the expected income level and the actual level, from which it is expected to have been derived. The long-run function, where there are no shifts in expectations, is given by the function:

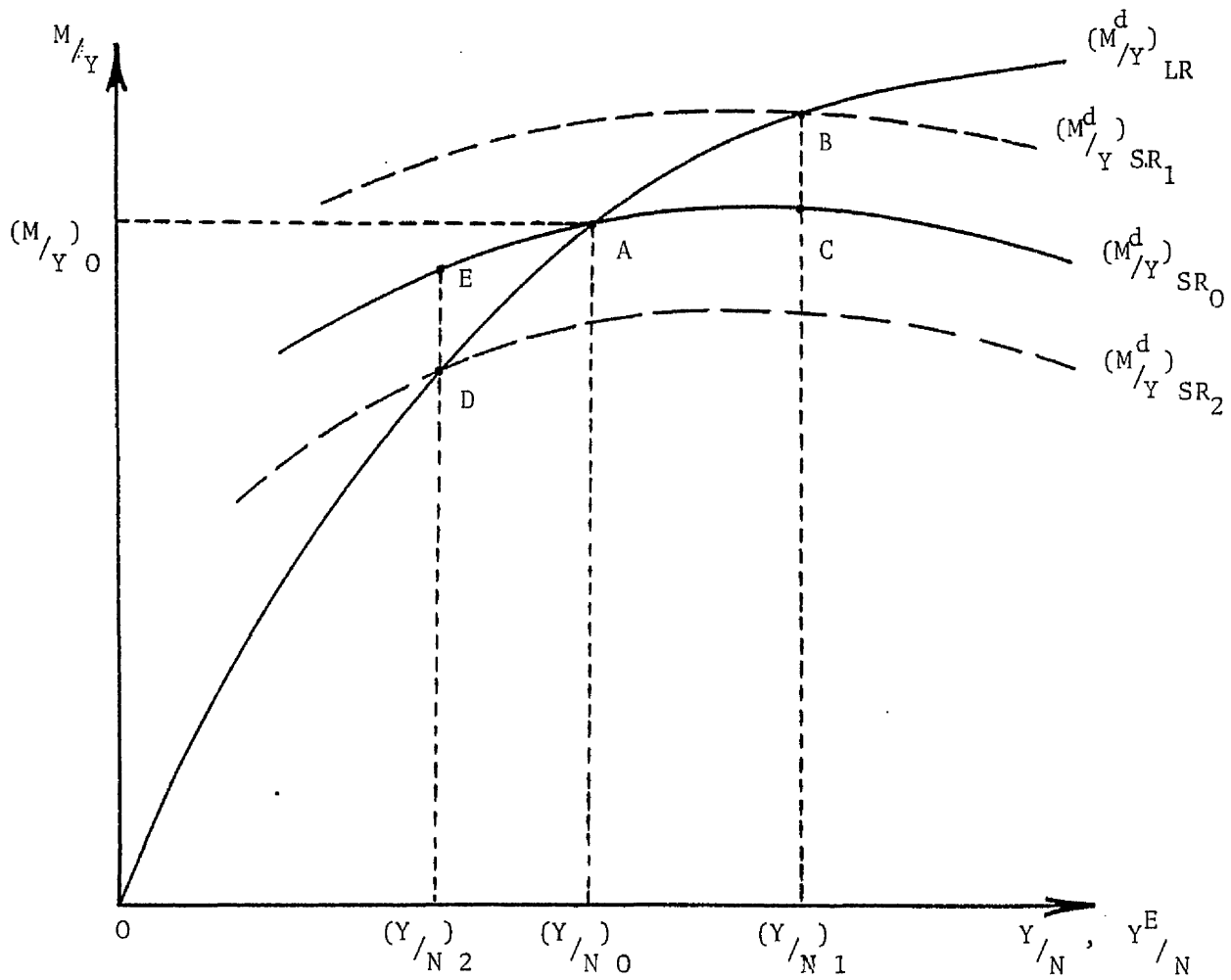
$$\left(\frac{M^d}{Y}\right)_{LR} = (a+d) - fi + b\left(\frac{Y}{N}\right) - c\left(\frac{Y}{N}\right)^2 \quad (5.5)$$

Economies at different income levels can be arrayed along this function, to show money demand, according to the appropriate $\left(\frac{Y}{N}\right)$ coordinate.

Suppose an economy starts on its long-run function at point A, where per capita income is $\left(\frac{Y}{N}\right)_0$, equal to expected per capita income for the following quarter, and demand for money relative to income is $\left(\frac{M}{Y}\right)_0$. Expectations now develop of increased economic activity, to bring income up to $\left(\frac{Y}{N}\right)_1$, or $\left(\frac{Y+\Delta Y^E}{N}\right)_0$. Demand for

Figure 5.1

Short- and Long-Run Demand for Money by Per Capita Income Level



money increases to that shown at point B, along the long-run curve, because of the finance motive. But at the same time, any idle money balances will represent a capital loss to holders since the value of other financial assets and of real assets is expected to rise during the expansion. For speculative reasons, then, demand will fall to position C (or lower if interest rates do vary between economies, rising in this economy because of pressure of demand for money). If the new activity level becomes established, capital gains will be reaped, and desired money holdings will return to position B, thereafter to move along the short-run curve $(\frac{M^d}{Y})_{SR_1}$, if expectations again shift.

Similarly, if expectations had developed of an income fall, from $(\frac{Y}{N})_0$ to $(\frac{Y}{N})_2$, desired money balances would fall to position D since there would be less activity to finance. But at the same time existing holdings of other locally-issued financial assets and real assets would be expected to fall in value, so there would be a desired shift into money balances to avoid capital loss; this is represented by position E. If activity level $(\frac{Y}{N})_2$ is indeed established, desired money balances would fall back to the long-run position, at D, at which a new short-run curve, $(\frac{M^d}{Y})_{SR_2}$, comes into operation.

This analysis represents only one blade of the Marshallian scissors. The actual position of the economy depends also on the supply side, which will be analysed in the next chapter. The final position will only coincide with that described here if money supply is perfectly elastic.

Application to Regions

Regions in the developed countries would be represented by points close together at the right-hand end of the demand for money function in Figure (5.1) while developing country regions would be, possibly, more spread out, at the left-hand end .

For a region as a whole, 'M' consists of the net sum of means of payment with respect to all other regions plus close substitutes. Since a region within a country is part of a national currency area, M must include nationally-issued notes and coin held by the region's households, firms and public sector (designated as 'C'). While, for them, deposits with the region's banks, D, also constitute a monetary asset, these constitute a liability of the banks. These deposits are only an effective means of payment with other regions to the extent that they are backed by bank reserves, R. We assume that banks hold reserves according to a nationally-determined reserve ratio, r , totalling rD . Finally, deposits held outside the region, other than by the banking sector, D' , constitute a further means of payment. For a region, then, the holding of money as a means of payment is defined as:

$$M = C + rD + D' \quad (5.6)$$

This 'M' is the regional monetary base. Total money, including liquid assets which are close substitutes for means of payment, is some multiple of this 'M', the multiple being higher, the higher the degree of financial development. (In some countries, banks operate across regions, so that reserves are held

on a national, rather than regional, basis. But reserves are held as a proportion of deposits for prudential as well as strictly regulatory reasons. It therefore seems appropriate to consider that national bank reserves may be allocated by region in a fixed proportion to deposits for analytical purposes.)

Regional differences in financial structure, as well as economic structure, vary by country. As with income distribution, financial structure appears to be fairly uniform at low levels of development, then diverge regionally, then become more uniform again as maturity is reached. When interregional trade is minimal, the asset which commands most local confidence as money is used (such as cowrie shells, or beaver pelts). But as trade develops, external confidence in currency becomes of increasing importance. The currency issued by the regions developing earlier are the most likely to command this confidence, so that seignorage is reaped by financial institutions in these regions.

Among countries currently developing, this process has occurred at such a pace that the regional financial polarisation has been so extreme as to promote a dual market structure.²⁴ Financial innovation in the export enclave is scarcely available in, far less applicable to, the rural sector. Transactions demand in the two sectors is thus differentiated as if by time, i.e. the temporal analysis is directly applicable: velocity is higher in the export enclave, but so is the proportion of money transactions to total income. The interdependence of the two types of region is more

apparent in terms of speculative, or asset, demand for money. Except in high-inflation situations, money and bank deposits issued in the export enclave have a relatively high liquidity premium and stable value. These bank deposits in the export enclave also have a relatively high liquidity premium and stable value in the rural sector where alternative financial assets are less accessible and where the liquidity of real assets is relatively lower (in terms of nationally acceptable currency).²⁵

In developed countries, this regional polarisation is not immediately obvious; transactions are almost all monetised, banking practices are more widely spread, financial centres more widely accessible, and markets in all assets more integrated on a national basis. Nevertheless, the same types of differences remain as are observed in developing countries, albeit to a markedly lesser degree. Although technical change in financial transactions percolates through the national banking systems from the financial centre, it does not do so immediately. At any one time there is a national hierarchy of financial sophistication. Physical and institutional distance from the financial centre also causes differentials in the quality of information in the centre regarding outlying regions, and in the regions regarding market developments in the centre. Agents in the remoter regions hold assets (say, bank accounts) in the financial centre as liquid balances whereas

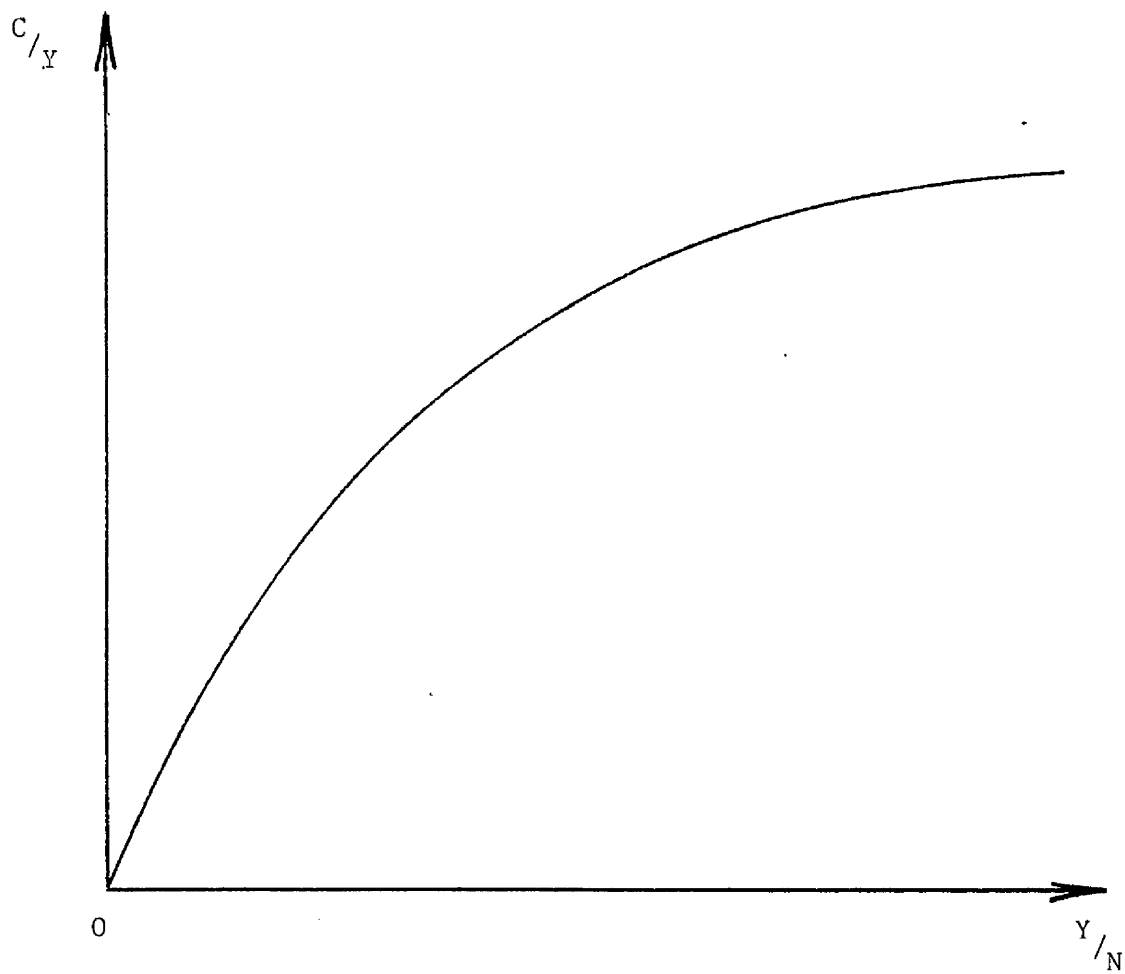
the reverse is only true to the extent that agents resident in the centre are involved in real economic activity in the remoter regions.

Finally, the analysis represented in Figure 5.1 can be taken a stage further in the regional context to incorporate the changing definition of the term 'money' as development proceeds. The analysis of transactions demand, in particular, could have been expressed in terms of demand for currency. Thus, as economies become monetised at early stages in development, currency becomes used for an ever-increasing variety of purposes. As minting uses up real resources, supply constraints gradually take effect, promoting innovations in transactions to conserve scarce resources. Hence, for currency, C , transactions demand relative to income traces out a quadratic function as per capita income increases, as shown in Figure 5.2.²⁶

The major innovation for cash conservation is the development of deposit-banking. Thus, by necessity, bank deposits acquire the attributes of money (often encouraged by central regulation of the banking system). Gradually, progressively more transactions are conducted by means of payment by cheque. In turn, the supply of bank deposits is limited by institutional constraints on bank reserves and on deposit-creation as a multiple of reserves. Alternative instruments are developed, then, to perform some of the asset functions of money (although not the payment functions) and

Figure 5.2

Demand for Currency Relative to Income by Per Capita Income Level



other innovations increase the efficiency of the deposit system (such as credit cards). Demand deposits, D , thus also follow a quadratic function, shown in Figure 5.3 in conjunction with the currency demand function.

One consequence of this series of developments is that the ratio of cash to demand deposits may be expected to fall as per capita income rises (then may eventually rise again, depending on the coefficients of the C/Y and D/Y functions), as shown in Figure 5.4. This relationship is of significance for a banking system where deposits are acceptable as money only because of their relationship to a controlled cash base. Its significance will emerge in the multiplier analysis of money supply in the next chapter, where the money multiplier is higher the lower is the cash-deposit ratio.

This analysis may be extended to incorporate the development of an array of liquid assets as intermediation develops. Although not money as a means of payment, savings deposits with banks, deposits with non-bank financial intermediaries, etc., each take over some of the asset functions of money as they become more established. Figure 5.3 could thus be extended by adding successive demand functions for other liquid assets, being introduced at successive levels of per capita income. The long-run demand function in Figure 5.1 depicts demand for money, defined as a particular collection of money assets. It is, then, the aggregation of the

Figure 5.3

Demand for Currency and Deposits Relative to Income
by Per Capita Income Level

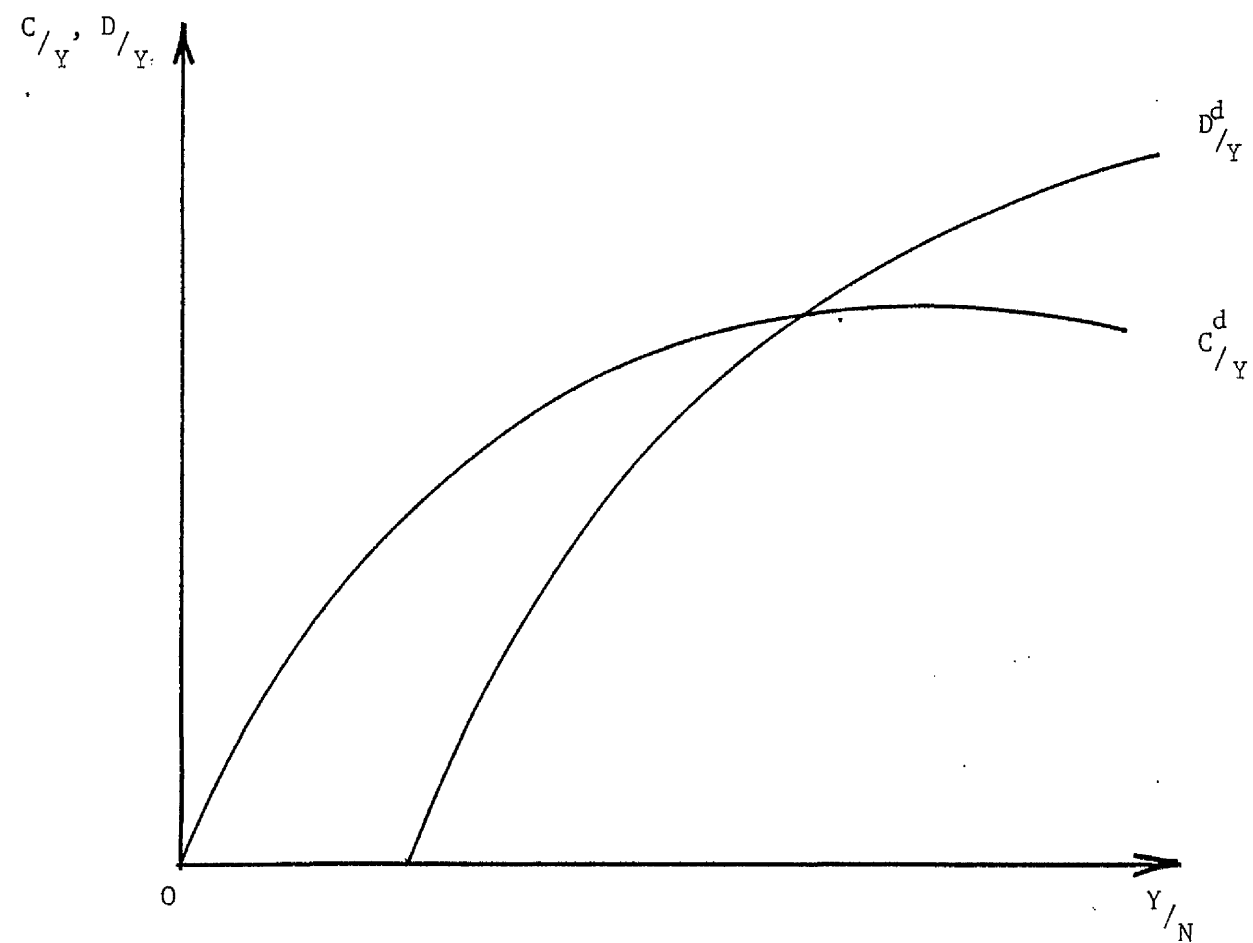
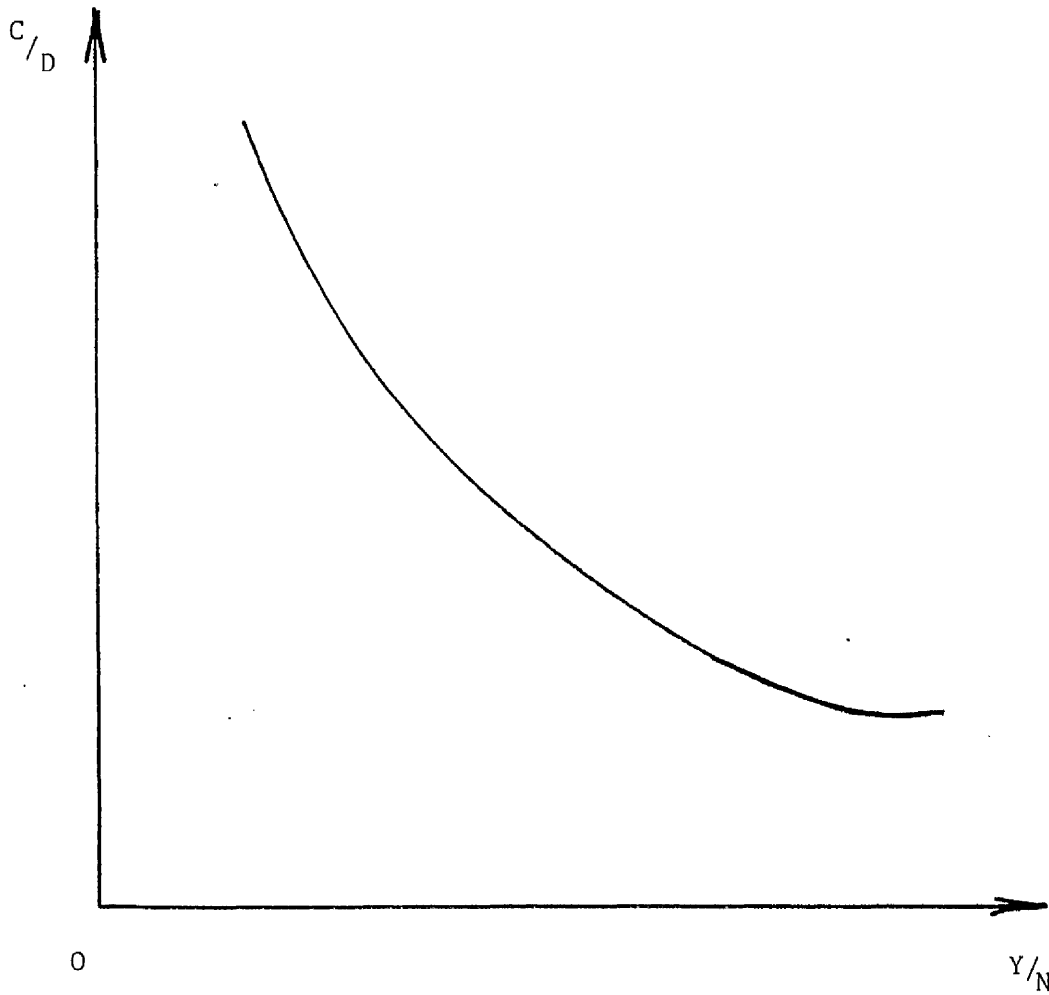


Figure 5.4

Currency: Deposit Ratio by Per Capita Income Level



$(\frac{C^d}{Y})$ and $(\frac{D^d}{Y})$ functions in Figure 5.3, plus the demand functions for other liquid assets as they successively acquire 'moneyness'.

Application to Nations' International Reserves

For a country as a whole, the money base 'M' consists of net holdings of means of payment acceptable in other countries: gold and foreign exchange (in notes and coin and in bank deposits) held by both the public and private sectors, SDR and unconditional drawing rights with the IMF. Total money exceeds this monetary base by the amount of reserves which are readily available through such means as swap agreements.

Domestically, money is some multiple of international reserves which is in general larger the greater the degree of financial development. The theory explaining the demand for total domestic money and its composition is sufficiently like that for regional economies that it will not be repeated here. Rather, this section concentrates on the demand for international reserves, since it potentially has different characteristics from the demand for domestic money.

There is a long-standing debate²⁷ as to whether the reserves held by the public sector constitute transactions balances (demand thus being determined by some measure of transactions, usually imports) or precautionary balances (demand thus being determined by some measure of variability of transactions). Officer²⁸ suggests that private sector demand is a transactions demand whereas public sector demand is a precautionary demand, in order to meet payments whose nature, size and timing are unpredictable.

In the extreme prototype of a floating exchange rates system, no public sector reserves are required at all, since price flexibility eliminates any unexpected (positive or negative) excess demand for foreign exchange. In practice full flexibility does not occur, and official reserves are still held, although possibly at lower levels when rates are floating.²⁹ Indeed, other things being equal, more reserves are demanded the less adjustment is politically acceptable or economically possible, either to the price of foreign exchange, the domestic price level, or domestic income and employment. Further, other things being equal, less reserves are demanded the more easily credit is available to make up any shortfall.

This situation is analogous in many respects to a region's demand for money function. Even at the level of individual households, money balances are held according to some judgement as to net expected receipts and expenditures over a given period. The penalty for inadequate holdings is the necessity to adjust: by cancelling expenditure plans, or selling assets at a capital loss. This necessity is diminished to the extent that credit is available.

Thus, although the degree of predictability of net reserve requirements and the degree to which price or income adjustment is possible will both vary as between nations and lesser degrees of aggregation, the general principles of demand for money theory at the micro level also seem applicable at the national level.

A higher transactions velocity of reserves for developed countries than developing countries has been discussed by Frenkel,³⁰ allowing economies of scale in reserves holding. Against this must be set the growing international integration of both real and financial

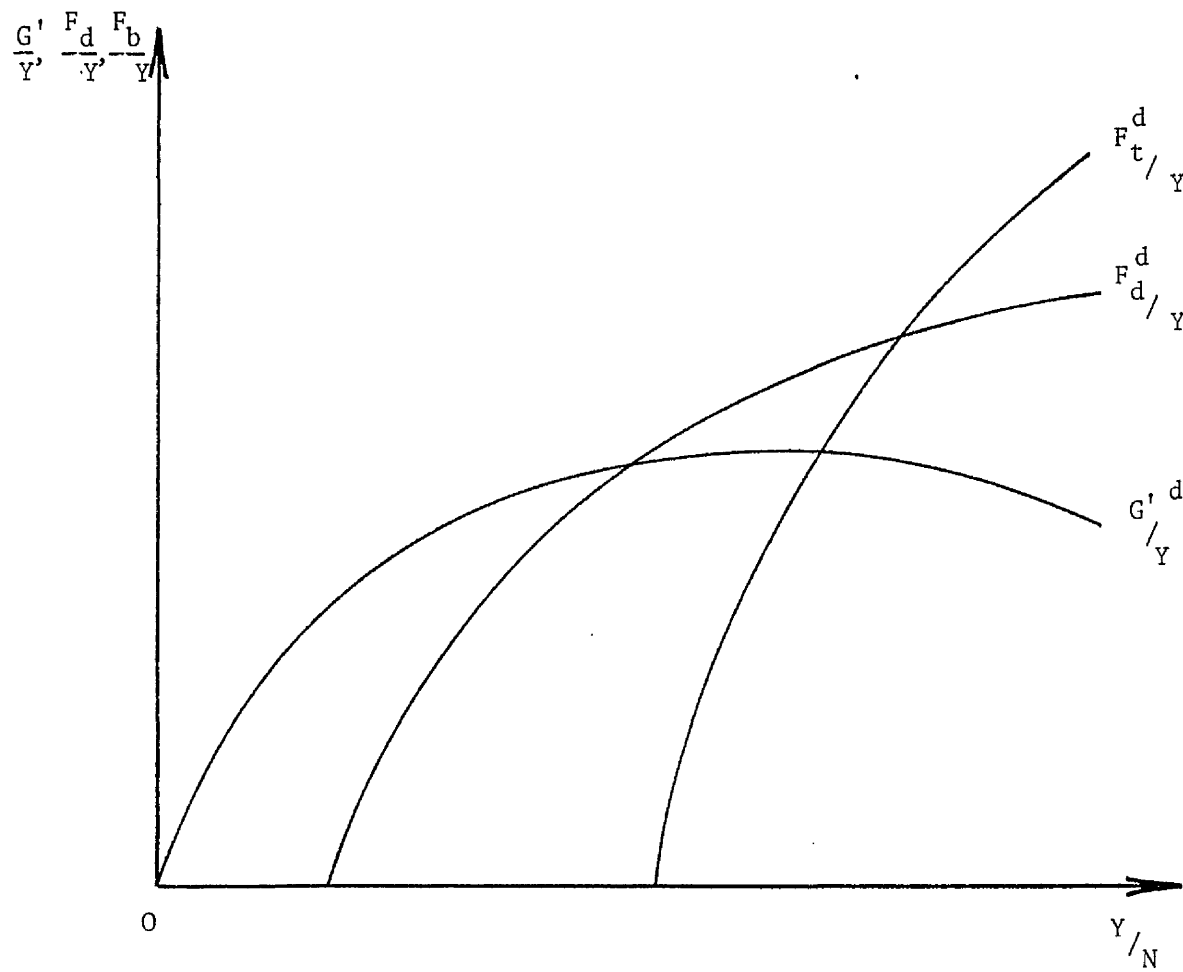
sectors which increases the value of foreign exchange transactions relative to the level of output, for developed countries. The same factors affect both public and private sector foreign exchange requirements, as a combination of transactions and precautionary balances.

Again this throws up a quadratic demand for reserves function, convex to the origin. Further, the same relationship roughly holds between gold, G' , foreign exchange demand deposits, F_d , and foreign exchange time deposits, F_t , as between currency, domestic demand deposits and domestic savings deposits as discussed in the regional context. As international financial intermediation developed, foreign exchange assets of lesser relative liquidity gradually took over some of the asset functions previously performed by gold. These relationships can be expressed diagrammatically as in Figure 5.5, with reference to per capita income, or stage of development.

The speculative demand analysis is equally applicable at the international level, in terms of avoidance of unfavourable adjustment. Indeed for developing countries the speculation may be quite direct in the sense that major development projects tend to have direct government involvement. Thus, if confidence is high in the export potential of the economy in general and a new project in particular, or in the attractiveness of the project to foreign capital, then foreign exchange reserves may be used up in purchasing equipment for the project. If confidence is low, then reserves will be conserved and the project abandoned because of the risk of total reserves proving inadequate and of adjustment

Figure 5.5

Demand for Gold, F.E. Demand Deposits and F.E. Time
Deposits Relative to Income by Per Capita Income Level.



being enforced. The capital gains and losses relevant to this context refer to the asset value of the economy as a whole. Thus, as in the domestic case, a shift to improved expectations increases the transactions demand for foreign exchange due to the finance motive, but then encourages a running-down of reserves to finance projects which will further feed the expected boom.

For developed countries, speculative activity will be less direct, but nonetheless important. If there is an excess demand for foreign currency, say, then a monetary authority confident in the strength of the domestic economy may finance this demand, propping up the foreign exchange value of the domestic currency; the value of exports would be expected to remain high relative to imports, and capital inflows maintained by this reassuring support for the currency. Reserves in this instance are being run down in order to reap the national capital gain derived from the investment of this continued inflow of foreign resources..

If confidence is poor, on the other hand, there will not be an excess demand for foreign funds for investment (finance motive) but there will be an increased demand for reserves (speculative demand) in order to avoid the capital loss associated with a defence of the currency which cannot be sustained, followed by enforced adjustment.³¹

Just as physical and institutional distance from financial centres among regions prevents the emergence of uniform financial markets, so between nations there is a lagged dispersal of technical change and differential access to financial centres.

Thus again, aside from relative degrees of optimism or pessimism, developing countries will tend to demand higher speculative balances relative to national income than developed countries.³² (The influence of short-run exchange rate expectations can be sufficiently powerful to dominate relative reserves preferences.) Further, to the extent that developing countries are subject to more unfavourable market forces than developed countries, there will be a tendency for the former to move more frequently down their short-run demand functions than up (see Figure 5.1), except insöfar as there is confidence in the responsiveness of international institutions to the emergence of new needs.³³

Speculation also occurs in terms of the choice of currencies to be held: optimism or pessimism with respect to one economy is a relative concept when a choice of currencies is involved. Further, world interest rates can be expected to influence the demand for reserves on the part of all countries. Higher rates represent a higher cost to the monetary authorities of acquiring additional reserves, and thus the demand for reserves can be expressed as a negative function of world interest rates.

Finally, the same phenomenon occurs internationally as subnationally with respect to the acceptability of assets as money. Thus the currencies of those countries which developed earliest (particularly sterling and the US dollar) are most generally accepted as international currencies. Thus an increase

in liquidity preference on the part of a developing country will, if satisfied, result in increased deposits with developed country banks, but the reverse is not the case (developed country liquidity preference is satisfied by deposits in other developed countries).

Conclusion

This chapter has set out a broadly Keynesian theory of demand for money which can be applied to open economies at different stages of economic and financial development. It is applicable both to comparisons of regions' demand for money and also to the demand for international reserves on the part of different countries.

The basic transactions (and precautionary) demand function converts fairly orthodox economies of scale arguments and theories of financial development from a long-run temporal framework to a spatial framework. The Keynesian speculative demand framework is then interpreted broadly to cover expectations regarding the valuation of all regional, or national, assets (in addition to fixed-interest securities). If the balance of 'real' economic forces (as discussed in chapter 4) becomes unfavourable to economic development, then there will be a 'speculative' increase in demand for money.

The interdependence of regional and national economies and financial systems has important implications. Expectations regarding the future of an economy are formed with reference to other economies, so that speculation will involve purchase or sale of the assets of more than the domestic economy. Further, given the uneven spatial development of financial systems, assets issued by institutions in some regions or countries which have developed early will perform money functions not only for those regions and countries domestically and in trade with others, but also for other regions and countries which developed later.

Already, supply considerations have assumed importance. Demand for additions to money stocks at any one time will be less if assets provide an increasing degree of liquidity, if credit is freely available, or if expenditure-related money supply is expected to provide additions to stocks in the near future. Thus the demand for money is not independent of supply conditions. In the next chapter, a general theory of money supply will be developed for regions and nations at different stages of economic development. The two functions, demand and supply, can then be discussed together and the implications of the resulting market outcomes brought out.

Footnotes

1. The applicability of domestic demand-for-money theory to national demand for international reserves has been emphasised in Chrystal's work. See for example K A Chrystal, 'Demand for International Media of Exchange', American Economic Review, Vol. 67 (Dec. 1977), pp.840-850.
2. As established by J M Keynes, The General Theory of Employment, Interest and Money (London: Macmillan, 1964), pp.230-232.
3. The increase in the proportion of financial assets in total to real assets as the latter grows has been well documented in R W Goldsmith, Financial Structure and Development (New Haven and London: Yale University Press, 1969).
4. See for example J O Adekunle, 'The Demand for Money: Evidence from Developed and Less Developed Economies', IMF Staff Papers, Vol. 15 (1968), pp.220-266.
5. J M Keynes, op.cit., pp.170-171
6. This interpretation is presented in H P Minsky, John Maynard Keynes (London: Macmillan, 1976) and P Davidson, Money and the Real World (London: Macmillan, 1978).
7. J M Keynes, 'The General Theory of Employment', Quarterly Journal of Economics, Vol. 51 (Feb., 1937), pp.209-223.
8. Ibid., p. 216.
9. The finance motive, referring to demand for money to finance planned, as opposed to actual, expenditure, was introduced by Keynes in one of his 1937 articles. See J M Keynes, 'Alternative Theories of the Rate of Interest', Economic Journal, Vol. 47 (June 1937), pp.241-252.

10. The precautionary motive will be examined in more depth when the demand for foreign exchange reserves is considered as a particular case of the demand for money. In this context, the precautionary motive is frequently describes as the dominant motive. See for example J H G Olivera, 'The Square-Root Law of Precautionary Reserves', Journal of Political Economy, Vol. 79 (Sept-Oct. 1971), pp.1095-1104.
11. I Fisher, The Purchasing Power of Money: Its Determination and Relation to Credit Interest and Crisis, reprint of 1922 edition (New York: Augustus Kelley, 1963), p.167
12. Ibid., p.167
13. Ibid., p.166
14. These two factors are combined as 'technical change' in C Lieberman, 'The Transactions Demand for Money and Technological Change', Review of Economics and Statistics, Vol. 59 (Aug., 1977), pp.307-317. His empirical work will be discussed in chapter 8.
15. W J Baumol, 'The Transactions Demand for Cash: An Inventory Theoretic Approach', Quarterly Journal of Economics, Vol. 66 (Nov. 1952), pp.545-556.
16. See R W Goldsmith, op.cit.
17. See M H Miller and D Orr, 'A Model of the Demand for Money by Firms', Quarterly Journal of Economics, Vol. 80 (Aug. 1966), pp.413-435.

18. See W L Silber, 'Towards a Theory of Financial Innovation', in W L Silber (ed.), Financial Innovation (Lexington, Mass.: Lexington Books, 1975), pp.53-89.
19. C P Kindleberger, The Formation of Financial Centres: A Study in Comparative Economic History. Princeton Studies in International Finance No. 36, Princeton; Nov. 1974.
20. Sir R Harrod, The Life of John Maynard Keynes (Harmondsworth; Penguin, 1972), pp.345-56.
21. This difference in substitutability is discussed in J O Adekunle, op.cit.
22. For a full discussion of money demand for self-financing in developing countries, see R I McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution 1973).
23. The limitations of the use of the interest rate as the determinant of speculative demand for money in the national context used by Keynes are outlined in H P Minsky, op.cit.
24. For a discussion of this phenomenon, see R I McKinnon, op.cit., and A P Thirlwall, Growth and Development: with Special Reference to Developing Countries, second edition (London: Macmillan, 1978).
25. See A Bhaduri, 'On the Formation of Usurious Interest Rates in Backward Agriculture', Cambridge Journal of Economics, Vol. 1 (Dec. 1977), pp.341-352 for a discussion of the valuation of real assets as collateral in the rural sector of developing countries.
26. The tendency for the currency:income ratio to rise as income levels rise (over time) or be higher in economies at higher levels of economic development (at low levels) was noted by Marshall. He also noted the tendency for the ratio to fall again once deposit banking developed. See A Marshall, Money, Credit and Commerce (London: Macmillan, 1923), pp.43-46.

27. See, for example, J Williamson, 'International Liquidity: A Survey', Economic Journal, Vol. 83 (Sept. 1973), pp.685-746.
28. L H Officer, 'The Demand for International Liquidity: A Test of the Square-Root Law', Journal of Money, Credit and Banking, Vol. 8 (Aug. 1976), pp.325-337.
29. See H R Heller and S Khan, 'The Demand for International Reserves under Fixed and Floating Exchange Rates', IMF Staff Papers Vol. 25 (Dec. 1978), pp.623-649.
30. J A Frenkel, 'The Demand for International Reserves by Developed and Less-Developed Countries', Economica, Vol. 41 (Feb. 1974), pp.14-24.
31. The application of speculative demand in its broadest sense, as used here, represents a departure from Keynes' writing. In the plan for the post-war international financial system attributed to Keynes, Great Britain, International Clearing Union, Text of a Paper containing Proposals by British experts for an International Clearing Union (New York: British Information Services, 1943) , he stressed the need to correct the prevailing asymmetry between pressures to adjust on countries in deficit and in surplus. But the reserves demand to be satisfied was expressed as a transactions demand. M. de Cecco, 'Origins of the Post-War Payments System', Cambridge Journal of Economics, Vol. 3 (March 1979) pp.49-61, argues that Keynes omitted coverage of speculative demand because he anticipated controls eliminating short-term capital movements. These movements, however, only represent speculative money demand in the traditional, narrow sense.

32. This argument is presented, for example, by J A Frenkel, op.cit. although not in terms of speculative demand.
33. Such a trend was observed during the 1970s when those developing countries with access to the Euro-dollar market built up reserves in vast amounts apparently in anticipation of adjustment problems should oil prices rise dramatically, causing a world recession. See, for example, D C Beek, 'Commercial Bank Lending to the Developing Countries', Federal Reserve Bank of New York Quarterly Review, Vol. 2 (Summer 1977), pp.1-8.

Chapter 6: A SPATIAL THEORY OF MONEY SUPPLY

Introduction

International economic theory and regional economic theory differ in an important respect regarding the supply of money. While (some) international theory recognises the power of the money supply to constrain national expenditure, regional economic theory in general does not take account of any money supply constraint at the regional level.¹ Thus, while the supply of international reserves to any one country is generally viewed as being to some degree inelastic, the supply of money at the subnational level is generally viewed as being elastic, accommodating demand. (Monetarists in general however regard the real money supply as being elastic at both levels of aggregation, as long as prices are flexible, thus ruling out any long-run implications of demand for money for the level of real output.²)

Discussions of the possibility of frustrated demand for reserves for developed countries in the short-run³ and the dual-gap discussions of development finance literature⁴ both emphasise the constraining power of an inadequate supply of foreign exchange at the national level.

The supply of money is described here as being perfectly elastic, or 'fully accommodating', if it is determined in such a way that it changes to the full extent of an increase in money demand, at a constant rate of interest. Any change in planned expenditure is thus not affected by any accompanying change in demand for money if the money supply is fully accommodating,

since this demand change is automatically met by a change in supply. Any money supply change in the direction of full accommodation, but which does not prevent an interest rate change is called 'partially accommodating'. A money supply change in the opposite direction to the demand change is called 'frustrating'; in this case, even if the money supply is a positive function of the interest rate, the money supply schedule shifts up when the demand schedule shift up, and down when the demand schedule shifts down.

Rather than accepting the implicit prevalent view that the regional money supply is perfectly elastic and fully accommodating, this chapter analyses the various components of money supply at the regional level in the same way as at the national level, in order, in chapter 7, to assess the degree to which they are accommodating or frustrating.

The flow supply of international reserves for any country is determined by the balance of payments, on the official settlements basis, a surplus representing a money inflow and a deficit an outflow. Interregional payments are amenable to a similar interpretation (although in practice regional balance of payments data are rarely collected). The analysis here is thus concerned with net flows of the regional or international supply of money, as defined in Chapter 5, according to conventional balance of payments categories. The analysis will be geared to establishing a relationship between these flows and per capita income levels, or levels of economic development.

Trade flows and capital flows to finance direct investment will be considered together, in accordance with the common cause hypothesis.⁵ All other capital account flows, regarded as 'financial' flows, will then be considered together.

Then, the flows associated with the public sector will be considered together. At the international level, these are accounted for primarily by capital account flows (loans, swaps, etc.), and also aid flows through the current account. At the regional level, there are also flows of funds to finance purchase of goods and services, and direct investment, and also fiscal flows through the current account which are of a much more complex nature than international aid flows.

Finally, all categories of money supply will be brought together in order to allow some broad generalisations as to the relationship between money supply and level of economic development, and thereby demand for money on a regional and international basis. This will be done by means of a model of interregional and international flows through the banking system.

The range of possible balance of payments developments is notoriously difficult to categorise in a general manner. As a simplification, the two polar cases will be isolated for attention: a prosperous, developed region or country, on the one hand, and a less developed region or country, on the other. These categories correspond to the prototype economies, Centre and Periphery, described in Chapter 4. While an unsatisfactory loss of generality results from restricting attention to polar cases, it allows greater clarity of exposition than the alternative taxonomy of

permutations and combinations of relationships between balance of payments items. Also, to the extent that the Centre-Periphery relationship is common in some degree to economic relationships between all regions and countries, the loss of generality is not severe.

Trade and Direct Investment Flows

Peripheral economies' production and exports are more heavily concentrated in the primary sector than those of Central economies. The analysis of this factor and its implications has been central to discussions of developed economy - developing economy relations since Prebisch's early work⁶ to the most recent products of the 'North-South Dialogue'.⁷ A similar emphasis is evident in some analyses of regional disparities.⁸

Although developed economies produce a large proportion of world primary production, nevertheless the general pattern for individual countries or regions is that developing countries export primary products to developed economies. The latter export primary products and manufactured goods to each other and manufactured goods to developing economies.

The relevant features of this trade specialisation in determining export receipts for each type of economy are as follows:⁹

(1) Elasticities of Demand: Price and income elasticities of demand tend to be higher for manufactured goods than primary products. (There are some major exceptions, at least in the short-run, such as oil, for which income elasticity is relatively

high.) Rapid growth in developed economies does not translate into as rapid growth in imports of primary products. On the other hand, growth in developing economies tends to produce a more rapid increase in demand for manufactured imports. Price inelasticity of demand for primary products limits the capacity of developing economies to increase export receipts by reducing prices. It does however allow increased export receipts to result from increasing export prices, if the political framework conducive to cartelisation is present, as in the case of the O.P.E.C. countries.

(2) Price Stability: Primary product markets are generally characterised by greater price flexibility than secondary product markets. There has been much debate, however, over the degree to which total export receipts of developing countries have been unstable, particularly given the low income elasticity of demand and efforts to stabilise markets in particular commodities. A recent study by Lancieri¹⁰ suggests that increasing stability is only apparent from aggregative studies of higher-income developing countries. Individual studies of low income developing countries indicate a positive relationship between both export and income levels and stability of export receipts. It has been questioned¹¹ whether the variance of these receipts has any importance compared with their mean; the likelihood of greater instability the lower the income level will for the moment be noted, but returned to later when discussing other variables which may be affected by it. (In particular, the demand for money can be expected to be higher, the greater the instability of receipts and expenditures.)

(3) Terms of Trade: Also long and hotly debated is the question of the trend of relative terms of trade of developed and developing countries, a question which is confused by the use of the barter terms of trade concept. (This concept shows terms of trade deteriorating, for example, with technical progress in a country's export sector.) The income terms of trade however demonstrate trends in import-buying capacity and, if measured per capita, are a good indicator of long-run trade developments. Thirlwall¹² assesses the evidence as indicating a gradual deterioration in developing countries' terms of trade, interrupted by a temporary improvement during the commodity boom of the early 1970s. (For reasons other than weak market power, even oil prices have not been increased as rapidly as profit-maximising theory would suggest.¹³) When combined with a low price elasticity of demand for primary products, deteriorating terms of trade militate against developing economy export receipts. To the extent that these receipts form a high proportion of income, high income elasticity of demand for developed country exports will however hold down developing country imports, aiding the maintenance of trade account balance.

(4) Substitution for Primary Products: Technological developments in developed countries have tended to produce substitutes for primary products produced mainly by developing countries, rather than develop further uses for them.¹⁴ Such substitution gains impetus in times of supply shortage, from natural causes or by deliberate producer action. The possibility of further substitution reduces the attractiveness of attempts to take advantage of short-run price

inelasticity of demand for primary products to increase export receipts. Import substitution is more readily available to the developed countries with their greater facility for technological innovation. Yet this is the strategy seen by many as the most effective solution for the developing countries to what is seen as a vicious circle of 'immiserizing growth'.¹⁵ This problem of substitution for primary products is much less prevalent among regions within a country. National governments generally have the power to limit increases in the prices of domestically-produced primary products either by regulation or by subsidy.

(5) Effective Protection: The facility for diversifying production in manufactured goods in developing countries is limited by the structure of tariffs imposed by developed countries. While tariffs are low or non-existent on primary product imports to developed countries, they are generally higher on products involving the further processing of these raw materials. Such a tariff structure increases the effective protection¹⁶ afforded to developed country manufacturing industry, by keeping input costs as low as they would be for similar industry in the country exporting the raw material. The result has been further encouragement to specialisation in primary production in developing countries and secondary production in developed countries. This phenomenon may be present also within countries, where central governments subsidise, for the purposes of regional policy or income redistribution, the production of primary products which are inputs to industry in the more developed regions. (The converse may, however, also occur whereby agricultural production is taxed to finance industrialisation in the more developed regions.)

Elasticity conditions are less unfavourable in the long-run for developing regions within countries because of their lesser ability to exploit favourable aspects of short-run elasticities. On the other hand, there is less scope for implementing protection to promote regional diversification than at the national level.

For the direct investment account, the exports total is an important determinant; the balance on the account in turn has important consequences for the imports total. Flows across the direct investment account occur in order to finance new productive enterprises or purchase existing ones. In a broad sense, the funds are attracted by a relatively high expected rate of return. The return concept includes a wide variety of considerations, not all quantifiable, such as the liquidity of the assets involved when located in particular economies, risk diversification on the part of a multinational enterprise, introduction of new process or product with anticipation of entry prevention possibilities, assessment of political stability, etc.¹⁷, as well as the more static concepts such as relative wage rates. Stability of export earnings may also be significant.

A real investment is intended as at least a medium-term expenditure. It involves judgements about future developments which are uncertain in the sense that they are not amenable to probability analysis. This uncertainty is greater the less information is available to the decision-maker. In particular it is greater for a potential investor considering a location in a different region or country. Further, more generally, expected returns on a project are subject to the same fluctuations in liquidity as returns on financial assets. Thus, if general economic conditions are expected to deteriorate in a particular region or country, this in itself will tend to reduce the M.E.I. of a project.

The investor's perception of an economy's general state of profitability, or its marginal efficiency of investment (M.E.I.), will

be strongly influenced by the export sector, which is often regarded as an important indicator , if not generator, of economic growth. Thus, according to the common-cause hypothesis¹⁸, there will be a strong positive correlation between export receipts and direct investment inflows. Further, on the basis of the above analysis of export receipts of Central and Peripheral economies the trend is for the former's M.E.I. to rise relative to that of the latter, other things being equal. Thus even if there is balance on the net trade account, Peripheral economies with weak export receipt growth will have correspondingly weak inflows of direct investment funds.

Within an economy, M.E.I.s differ by project, and by the circumstances of the potential investor, as well as by government's treatment of the project. Government incentives to location of industry in developing regions or nations, if effective, are designed to attract enterprise with strong dynamic linkage effects on the rest of the economy, as well as more immediate multiplier effects. These multiplier effects in an open regional or national economy are strongly conditional on import requirements. The greater the initial degree of specialisation, the greater the import requirements of new industry, for raw materials in industrialised economies and capital goods in non-industrialised economies. Individual enterprises may be regarded as microcosms of the overall trend in export receipts and import payments in developed and developing countries, and of the increasing concentration of economic activity in developed regions and nations.¹⁹ To the extent that capital goods requirements are greater than raw material requirements, payments will be more significant for enterprises in

developing regions and nations for imports from developed regions and nations than vice versa.

The real multiplier effects of new enterprise will thus be relatively low in Peripheral economies, and import payments will be relatively high.²⁰ Although increased diversification in intermediate, semi-Peripheral, types of economy will reduce the relative import content of the production process itself, the impact multiplier of the initial investment will always be greatly reduced if there is no local capital goods industry. It is this dependence on imported inputs which keeps the income elasticity of demand for imports high; in sovereign states, the income elasticity of demand for imported consumer goods can to some extent be controlled (by taxation or protection), but among regions the lack of this control will allow a high import leakage to purchase consumer goods as incomes rise with the multiplier.

A further associated balance of payments item is profits repatriation associated with the direct investment. It is common to all types of economy: the greater the direct investment from outside the economy and the greater its profitability, the greater the profits outflow. There is a sense, however, in which profits flows out of developing economies can have a more harmful, direct effect than out of developed economies. Having a lower scale of economic activity, Peripheral economies may only be able to sustain a few, large enterprises. Once these enterprises are established, often with some monopsony and monopoly power, profit outflows may continue indefinitely, not offset by the continuous direct investment inflows enjoyed by a large, growing Central economy as new establishments are set up.

Overall, then, factors militate against strength of export receipts in Peripheral economies. Where such strength emerges, attracting direct investment, correspondingly increased imports and profit outflows tend to use up the foreign exchange gains. Central economies, as a whole, are more self-contained. Export growth potential is more favourable, as are therefore prospects for direct investment; yet the import offset is less elastic, particularly in the long-run. Thus money supply increases through the trade and direct investment accounts are more likely to be favourable to Central than to Peripheral economies.

The Central economies are not dependent entirely on Peripheral economies for export demand since it may be strong on the part of intermediate types of economy, the high-income developing countries or regions. These are economies which have broken through the vicious circle of the Peripheral economy, either by successful cartelisation to increase export receipts or diversification into manufacturing. This latter in particular has resulted in further specialisation, with the Central economies concentrating on high-technology and service industry, and the intermediate economies in labour-intensive manufacturing industry. This form of specialisation preserves to some extent the same relative elasticity relationships associated with relative income level as in the Centre-Periphery comparison: Central economies having higher income and price demand elasticities for their exports than intermediate economies, which in turn have higher elasticities than the Peripheral economies.²¹

These middle-income economies can also be said to occupy a middle ground in financial markets (as well as commodity markets).

The evidence is provided for them alongside the evidence for Central and Peripheral economies in Chapters 9 and 10. But in order to avoid repetitiveness, the nature of this middle ground will not be drawn out further in the remaining theoretical discussion.

Other Autonomous Capital Flows

In addition to the money flows to finance real expenditure, as considered in the last section, money flows also occur between regions and nations to finance the purchase of financial assets. In some general equilibrium models, it is these capital flows which ensure payments balance by offsetting any imbalance on the trade account. Any remaining imbalance is then regarded as signifying the existence of some market imperfection, or absence of capital market integration. In other general equilibrium models, capital outflows accompany trade deficits; they do not finance the deficit, but rather speed up adjustment to the deficit.

Relative interest rates play a crucial role in this process. It is important to note at this stage that in the majority of these general equilibrium models no distinction is drawn between direct investment and portfolio investment on the one hand or between their respective expected rates of return on the other. In effect, the perfection of capital markets is assumed to the degree that direct investment may be subsumed as a particular case of portfolio investment, so that the discussion may then be conducted entirely in terms of interest rates.

When an economy is experiencing a trade deficit, accommodating capital inflows may be expected to finance it according to two

possible theories: Scitovsky's version of the loanable funds theory²² and Ingram's theory of bank behaviour.²³ First, with no change in the public sector balance (a restriction to be lifted in the next section), a trade deficit signifies an excess of investment over savings, ex post (according to the national income identity). The resulting upward pressure on interest rates will attract capital inflows to finance the trade deficit. Even if market imperfections inhibit the movement of capital, the interest rate change will aid adjustment by reducing planned investment, and thus income and imports, although the short-term financing problem remains. Within countries, where the scope for regional interest rate differences is small, the capital inflows will be freely available at the going interest rate structure, allowing automatic financing.

Ingram discusses how this automatic financing is facilitated by a national banking system which trades in a large stock of "generalised claims", primarily public sector securities. Thus the local banks finance a deficit by selling some of their stock of generalised claims. The banks' reserves are thus built up again by the inflow of funds resulting from the sale of securities.

Alternatively, capital may be expected to flow out of a region or nation experiencing a trade deficit. According to Ohlin's model of interregional adjustment,²⁴ which can be applied to nations to the extent that capital and labour are mobile, it is factor mobility which restores payments balance. Thus a decline in exports reduces returns to factors relative to other economies, inducing factors to move out until marginal returns are restored to

a uniform, equilibrium level. By marginally reducing the factor scale of the economy in question, exports are restored to competitiveness and imports reduced, and trade balance restored.

The monetary theory of the balance of payments suggests a similar outcome by a different approach.²⁵ A trade deficit is interpreted as being equivalent to an excess supply of money. During the adjustment process, therefore, interest rates will be held below the world level and capital outflows encouraged. By adding to the payments deficit, these capital outflows speed the reduction of the money stock to the desired level, when trade balance can be restored.

According to the first two approaches, then, a trade deficit will only be accompanied by a money supply loss, and a surplus by a money supply gain, if capital is insufficiently mobile. With capital market integration extending from the financial centres out, a trade imbalance is thus more likely to be accompanied by a net money supply change (not offset by capital flows) in Peripheral economies than Central economies (aside from public sector flows, to be considered in the next section).

According to the second two approaches, a money supply change resulting from a trade imbalance will be accompanied by an additional money supply change in the same direction. The change will be short-lived however, and represent a move to an equilibrium money stock position.

The question of which type of approach is more appropriate would appear to rest on the empirical question of whether trade deficits tend to be associated with relatively high or relatively

low interest rates on the one hand, or on capital inflows or outflows, respectively. The evidence however is inconclusive;²⁶ the difficulty of interpretation is in any case compounded by the existence of public sector flows which are yet to be considered. Each approach will therefore for the moment be assessed on its theoretical merits.

The first two approaches are subject to the same drawback, that they refer only to the financing of temporary payments imbalance.²⁷ This imbalance is treated as a stochastic, marginal phenomenon which is soon reversed. For this type of imbalance, certainly the demand for funds to finance it may be expected to induce supply through international capital markets or domestic banking systems.

But this type of short-term financing is not necessarily easily forthcoming in the case of a 'fundamental disequilibrium', a situation, say, of shortfall in export earnings compounded by an outflow of direct investment funds (re-introducing the distinction between direct and portfolio investment). In fact, portfolio investment may be positively discouraged. Even if interest rates were to rise for the economy's securities, default risk, or the expectation of further interest rate increases, or a currency devaluation in the case of a sovereign state, could encourage short-term capital outflows.

These would occur with results other than those suggested by Ohlin's approach, of the second pair of approaches, and for reasons other than those suggested by the monetary approach. Capital may indeed flow out of an economy in trade deficit, because of relatively low returns, not through any conscious decision to rid the region of

excess money balances. But, for an economy perpetually verging on a trade deficit position whenever expansion is attempted, the capital outflows accompanying these deficits cannot be interpreted as equilibrating. The value of the marginal product of factors does not necessarily rise as factor supplies fall if the value of the product is steadily falling. Further, factor outflows impair availability of productive capacity for the next expansion. The outflows themselves may thus exacerbate the income decline they had anticipated, prompting further outflows.

Thus portfolio capital movements may, like direct investment flows, add to the outflows resulting from trade deficits, if these are seen as likely to persist, representing a serious weakness in the export sector and/or the economy as a whole. Economies in surplus may similarly be expected to attract capital inflows. These tendencies will be modified to the extent that interest rates adjust to encourage offsetting capital flows, and to the extent that capital flows are responsive to interest rates in such circumstances.

Among regions, the degree of capital market integration ranges from almost complete segmentation between the rural sector and the export enclave in low-income developing countries²⁸ to full integration via a national banking system in developed countries.²⁹ In the former case, interregional capital flows of any kind are severely limited, while in the latter they occur with great ease. In the case of regional financial market integration, capital inflows by sales of a region's assets (held by banks, or households and firms)

are straightforward when a large proportion of these assets are 'generalised claims'. But initial holdings place an inevitable limit on this form of financing a continuing deficit. Further financing must take the form of incurring liabilities. But lenders in other regions may become progressively less willing to acquire such assets if a region's export sector is weak relative to imports. This limitation to inflows will be compounded by sales of locally-issued assets and purchases of assets in more prosperous regions by those wishing to avoid capital losses. It is this tendency for capital flows to be perverse, in the sense of compounding trade imbalances, which has produced strong arguments against monetary integration; such integration would prompt Ohlinian capital flows out of low-return regions, but in a continuous manner, eroding the regional factor base.³⁰

This 'perversity' in capital movements is less likely to apply to Central regions than Peripheral regions when in trade deficit. Since 'generalised claims' are primarily those issued by the Centre economies, and since the existing stock of financial assets is in any case high because of high per capita incomes, the ability to 'ride out' a deficit is much greater. Since the impetus for capital outflows is in any case an expectation of enforced income adjustment, Central economies may enjoy a virtuous circle: as long as the expectation of economic strength is successfully upheld, capital will continue to flow in to finance the deficit, justifying the expectation. Of course, if that expectation is punctured, short-term capital outflows will in turn prove that

judgement to be correct, on a scale which can be highly destabilising. But, given the nature of Central and Peripheral economies as presented so far, expectations are more likely to be pessimistic regarding a Peripheral trade deficit than a Central trade deficit. The former is most likely when growth is attempted, growth which must be aborted if the deficit is to be removed. The Central trade deficit will often be associated with an economic downturn with low asset prices to attract capital in anticipation of an upturn.

At the international level, the analysis is parallel. Developing countries have less, though growing, access to international capital markets than developed countries. They are less subject, then, to large short-term capital flows. But the structure of expectations will be such, given the nature of the two types of economy, that financing will be less freely available to Peripheral countries, a situation compounded by purchases of foreign assets by residents in the export enclave in order to avoid capital losses.

Indeed, attention must be given to the preferred portfolio structure of residents in each type of region quite apart from trade imbalance financing requirements. Differences in preferences could cause systematic flows through the capital account independently of the trade account. The main theoretical contribution in this context is the financial intermediation theory of Despres, Kindleberger and Salant.³¹ This theory explains the U.S. balance of payments deficit vis-a-vis Europe as reflecting the financial intermediation function of the U.S., lending long and borrowing short. The U.S. could thus satisfy the

the relatively high liquidity preference of Europe in the same manner as a bank.

In Chapter 5, a demand for money function was postulated which may be analysed in the same way, although the question remains as to whether or not it is satisfied. First, we consider how the demand for money is influenced by the supply of liquidity provided by a particular money supply. Then we consider the effect of differences in the demand for money on the supply of money, as a result of capital flows.

The liquidity supplied by a given stock of money will be higher in Central economies than Peripheral economies for the following reasons:

- (a) In Peripheral economies the market in real assets (human capital, housing stock, plant and machinery, land) will be much thinner, involving more 'imperfections' than in Central economies. The liquidity of these assets will be correspondingly less. In order to maintain the same average liquidity over all assets, Peripheral economies have to hold a more liquid financial asset portfolio.
- (b) Because of transactions difficulties increasing with distance from financial centres, the liquidity of the same financial assets will be less in Peripheral economies than in Central economies. Thus, again, in order to hold a financial portfolio with the same degree of effective liquidity as Central economies, Peripheral economies must hold financial assets which, if held in Centre, would be more liquid than the Centre economies' portfolios.

(c) Further, because they have less access to unconditional credit than Central economies on the basis of an equal stock of money or reserves, Peripheral economies have less room for manoeuvre in times of payments imbalance. Particularly if export receipts are relatively unstable and if unchecked growth poses continuous deficit problems, then there will be a greater preference for holding financial assets in relatively liquid form.

Liquid assets, for Peripheral economies, include those issued in the Central economies: Eurocurrency deposits for countries, central government bonds³² and bank accounts in the financial centre for regions. Increased demand for such assets results in capital outflows, reducing the Peripheral economies' money stock. This factor is intensified to the extent that the business sector is dominated by multinational or multiregional companies, often with head offices located in the Central economies, which hold the bulk of their financial assets in the financial centres.

The obverse of this relatively high demand for money on the part of Peripheral economies is the relatively low demand for money on the part of Central economies, which might be expected to result in longer term capital inflows into the Peripheral economies. The preference for illiquidity is however conditional on relative rates of return, rising with degree of illiquidity. Mitigating against the return on Peripheral economy liabilities is the lesser degree of liquidity on otherwise equivalent, collateral assets in Periphery than Centre because of market imperfections. Added to this is concern over risk of default. In fact, rates of return in developing countries, and increasing experience with refinancing, appear, in the 1970s at least, to have been sufficiently

high to induce significant long-term capital inflows to the developing countries.³³ But these inflows have been concentrated in the high-income developing countries.³⁴ Further, it is possible that the trend towards increased lending to developing countries may be reversed, if demand for long-term funds should rise in the developed countries following the current downturn. Indeed there appears to be prudential concern among American banks that they have over-extended themselves in their lending to developing countries.³⁵

The allocation of long-term lending among regions within a country has been less widely discussed, or even quantified. Relative rates of return are however no doubt of primary importance, although the relative liquidity of the borrowing party's assets will condition perceptions of those returns. But, while preference for holding relatively more liquid assets will be higher in Peripheral regions, there is no a priori reason to suppose that rates of return on long-term financial assets would be higher than in the Central regions, i.e. that this high demand for money would necessarily lead to capital inflows (on the long term account). The discovery of oil deposits, for example, certainly allows marginal rates of return on lending which far outweigh any regional differences in liquidity or asset values. But in the extreme Periphery case where the economy specialises in the production of a few primary products for which external demand is stable but not growing relative to other product markets, and where the domestic regional market for other products is not large, the incidence of high rate of return ventures is not likely to be high. The only prospect would be labour-intensive production which could take advantage of cheap labour, if such existed.

In summary, then, in times of deterioration of the export sector or high import growth, net capital flows are more likely to be in an outward direction from a Peripheral economy than a Central economy. The scale of flows, inward to finance a trade deficit or outward to avoid capital loss, will be of a smaller dimension for Peripheral economies because of their lesser degree of integration with wider financial markets, but not necessarily smaller as a proportion of total financial assets than in Centre. While there will be a tendency for Peripheral economies to hold a high proportion of financial assets in liquid form, in the form of Centrally-issued financial instruments (see Tables 9.6, 9.17 and 10.5), there will only be a return flow of long-run capital to the extent that high-return projects are available for financing. The perception of these returns will vary with degree of economic development, tending to rule out significant long-term financing from external private sources for the low-income Peripheral economies.

On average, then, money supply increases through the capital account are more available the higher the level of economic development. In periods of trade deficit, the money supply loss is more likely to be compounded by further losses through the capital account in Peripheral than Central economies; indeed in the latter, the capital account generally provides inflows to finance the trade deficit. Long-term capital inflows to Peripheral economies are also positively related to per capita income level.

Public Sector Flows of Funds

Included in all the components of the balance of payments are transactions conducted by the public sector, for commercial and non-commercial purposes. Many of these transactions result in financial flows which finance autonomous payments imbalance, and also reverse expectations of diverging rates of return. In turn, therefore, private sector transactions are influenced by expectations of governmental influence on economic developments. For regions, the relevant public sector is that of the central government. For nations it is international governmental organisations, such as the I.M.F., and the World Bank. For nation-groupings there may be a further international fiscal authority performing functions intermediate to the large international bodies and national governments.

The crucial role of the public sector in promoting regional balance in particular is to be stressed, quite apart from the stimulus to capital market integration provided by a large, active market in government securities.³⁶ Government's automatic stabilisers for the national economy also serve to stabilise interregional differentials. If the tax system is progressive, then low-income regions contribute a lower proportion of income in taxation than high-income regions. Also, residents of the Peripheral regions will receive proportionately more unemployment and social security benefits than the Central regions. These stabilisers assure a higher regional money supply in Peripheral regions, and a greater degree of confidence in the stability of the regional market than would otherwise be the case.

Whether the 'automatic' element of public sector transactions involves a net inflow or outflow of funds depends on the regional distribution of other government expenditures. Aside from discretionary regional policy-related expenditures, the bulk of government purchases of goods and services will occur near the central government location. To the extent, then, that Peripheral residents and institutions have a relatively strong preference for holding government securities, the net flow of public sector funds (other than discretionary regional funds) could in fact be outward from the Peripheral regions to the Central regions.

Governments in most developed countries, and some developing countries have as a political goal the support of low-income regions and the dispersal of economic activity to these regions. While some view this goal as being best pursued by assuring the growth of Central regions, relying on spread effects towards the Peripheral regions, others view direct intervention in the Peripheral economies as the preferred strategy. This strategy, in turn, may reflect either a sacrifice of national efficiency on equity grounds, or a means of promoting national efficiency by preventing the supply bottlenecks which push out the Phillips curve when regional market segmentation is allowed to occur.

This discretionary regional policy may be partly automatic and partly ad hoc. A battery of measures may be instituted to apply to any region which passes below some threshold income or employment level, but more usually these measures are applied after a time lag to specific regions identified as already stagnant or as emergency measures as serious problems emerge. These measures

may consist of a regional government purchasing policy, inducements to private sector expenditure in the form of grants, tax holidays, cheap credit or import controls, or government capital expenditure.

The public sector in this manner attempts to get round the problems posed by the fallacy of composition. If each potential investor in a region expects no other investor to favour the region, then each will include in his calculations of rates of return an absence of external economies from other producers, and their local factor markets and product markets. More optimistic expectations on the part of each potential investor would prove their optimism well-founded if all went ahead with their investments. (The major exception would be a situation of a local pool of cheap labour; the influx of a number of firms would put upward pressure on local wages, eroding the initial advantage.)

By attempting to demonstrate continuing confidence in Peripheral regions, governments can attempt to overcome the vicious circle otherwise involved in investment decisions, as well as by directly reducing costs and increasing rates of return. Inflows of government money accompanying real government expenditure thus have the best chance of inducing private sector capital inflows of both the portfolio and direct investment varieties. Measures to increase the rate of return on such inflows are less well able to generate sufficient optimism to overcome fears of default or the value of plant and machinery plummeting, unless the government guarantees to purchase assets should the venture fail, for example.

The taxation/income transfers element of government redistributive policy is the weakest in terms of generating economic

activity, since they have little effect on the outflows of capital which may more than offset the public sector inflow. Of course, for regions where increased economic activity is inconceivable, these fiscal transfers are nonetheless justified on humanitarian grounds.

Kindleberger at one time contrasted the predominance of equity considerations at the regional level with their absence at the international level.³⁷ The prominence given to the North-South dialogue, reflecting perhaps an increased political power among at least higher-income developing countries, demonstrates the relatively high degree of international concern with redistribution (whatever the motivations involved).

The only automatic element in international public sector redistribution is the unconditional element of I.M.F. credit, at favourable interest rates. Otherwise, the redistribution of funds is discretionary involving more or less long lags. The particular payments problems of developing countries have been recognised by the I.M.F. and met by three special facilities which are designed to respond rapidly to needs: the Buffer Stock Financing Facility, the Compensatory Finance Facility and the more recent Oil Facility.³⁸ These facilities fill the gap perceived to exist in the availability of financing arrangements in the private sector capital markets. In addition, the stand-by facility allows an I.M.F. member to arrange credit in advance if its needs can reasonably be predicted.

Other forms of public sector funds are more discretionary, and hence less confidence-inducing. They are discretionary in that

individual country contributions to international organisations or bilateral assistance are determined by the budgetary process and conditioned more by cyclical developments in the donor country than particular needs of the recipient countries. In turn, assistance distributed by international organisations like the World Bank is primarily project-related, and thus contingent on the availability of appropriate project proposals. Outright grants form a relatively small proportion of total flows, although development assistance is certainly directed relatively more towards the lower-income developing countries.³⁹

Expenditure-related credit (to finance projects or in the form of tied aid) allows Peripheral countries to undergo economic expansion without incurring the usual problems of being unable to finance the associated imports. In addition, there may be strong linkage effects both in encouraging expansion in related sectors and also in engendering the confidence of financial markets in the economy. Almost by definition, however, this type of assistance does not add to the Peripheral economy's liquid resources, since the foreign exchange returns to the developed countries in payment for imports of capital goods, raw materials, consumer goods and personnel for technical assistance. As a result, the recipient countries are faced with even worse liquidity problems when the debt has to be serviced, possibly requiring the undoing of much of the development process put in train by the initial loans.⁴⁰ Only those countries which have developed sufficiently in the meanwhile to attract private sector flows will be able to service the debt without undergoing severe income adjustment, although the

size of the debt burden itself is often an explicit (negative) criterion for bank lending.⁴¹

The provision of both bilateral and multilateral assistance is in general negatively related to per capita income.⁴² Public sector flows of funds thus serve directly to counteract the opposite relationship prevailing in the private sector distribution of capital. They also serve this purpose indirectly to the extent that the credit is conditional on economic adjustment policies being implemented which would make the recipients more credit-worthy for private sector borrowing. These public sector flows thus modify the generally positive relationship found so far between the supply of money and per capita income.

A Model of Bank Lending Behaviour

The role of the banking system is central to the generation and distribution of liquidity. The banking system is also a major conduit for capital flows between economies, whether or not the banks branch in more than one economy. This section focuses on the portfolio preferences of banks and their implications for the money supply in order to provide a rigorous application of the preceding discussion of capital flows.

In this section, therefore, an attempt will be made to provide a detailed account of bank decision-making and how it may affect different types of economy. The model will first be worked out on a general basis of one bank operating through a branch network in both the Central and Peripheral regions of a closed economy.

Then the model will be adapted to two banks, one operating in Centre and one in Periphery, to represent national banking systems which are not branch bank systems. This version also may be viewed as a model of international bank lending behaviour, where banks in each country hold assets issued in other countries, including reserve assets in the form of deposits with banks in Central economies.

a) Inter-economy capital flows within one bank's portfolio

The first step is to build up the one, multiregional bank's profit function, relating costs and revenues to its liabilities and assets. The bank's liabilities consist of deposits of one, interest-bearing kind, the total consisting of those made in Centre, D_C , and those made in Periphery, D_P . The costs associated with deposits are the interest payments, made at the rate i^D , and the operating costs associated with processing cheques. These costs are designated as being a fixed proportion, t , of the value of cheque transactions, $V_C D_C$ and $V_P D_P$ in the two regions, where V_C and V_P are the respective rates of turnover, or velocity, of deposits. As concluded in Chapter 5, V_C exceeds V_P because of the greater degree of financial sophistication in Centre.

Revenue is derived only from earnings on assets, since it is assumed that service charges are already incorporated in interest payments on deposits, and charges on loans. A statutory proportion, r , of deposits is held in reserve assets with the central monetary authority, earning a low rate of interest, i^R . The remainder is allocated between loans to Centre residents, L_C , earning interest at the rate i_C^L , and loans to Periphery residents, L_P , earning interest at the rate i_P^L . ('Loans' are defined to include 'advances' in the British terminology.) Offsetting these

earnings are costs associated with processing loans, expressed as a proportion, $\underline{\ell}$, of the value of the loans. Finally, the items \bar{C}_c and \bar{C}_p are added to costs to represent fixed branching costs in Centre and Periphery respectively.

The profit function, π , is then:

$$\begin{aligned} \pi = & (i_c^L - \underline{\ell})L_c + (i_p^L - \underline{\ell})L_p + (i^R - i^D)(D_c + D_p) - t(V_c D_c + V_p D_p) \\ & - (\bar{C}_c + \bar{C}_p). \end{aligned} \quad (6.1)$$

The conditions for a profit maximum are only met at a corner solution: with $L_p = 0$ if $i_c^L > i_p^L$ and $L_c = 0$ if $i_p^L > i_c^L$.

Suppose, however, that the possibility of different banking market structures in Centre and Periphery is considered. Indeed, given the earlier discussion of the nature of these two economies, it is reasonable to suggest that there is a greater degree of local monopoly in Periphery than in Centre. The 'bank' under consideration here can in fact also be regarded as an aggregation of banks which have higher concentration in Centre, because of higher concentration of population, business activity and financial transactions. Suppose, then, that competition in Centre produces a single lending rate, i_c^L ,⁴³ but that any one bank branch in Periphery faces a downward-sloping demand curve for loans, so that

$$i_p^L = \alpha - \beta L_p, \quad \alpha, \beta > 0 \quad (6.2)$$

The value of the coefficient β reflects the degree of monopoly. Further, expressing the decision variable L_p/L_c as λ , and using

the relationship between total loans and deposits, then:

$$L_c = \left(\frac{1-r}{1+\lambda}\right)D \quad \text{and} \quad L_p = \left(\frac{\lambda}{1+\lambda}\right)(1-r)D \quad (6.3)$$

where $D = D_c + D_p$.

Substituting equations (6.2) and (6.3) in equation (6.1):

$$\begin{aligned} \pi = & -\beta\left(\frac{\lambda}{1+\lambda}\right)^2(1-r)^2D^2 + \left[\left(\frac{i_c^L + \alpha\lambda}{1+\lambda} - \ell\right)(1-r) + i^R_r - i^D\right]D \\ & - t(V_c D_c + V_p D_p) - (\bar{C}_c + \bar{C}_p) \end{aligned} \quad (6.4)$$

The first-order condition for a profit maximum is satisfied when:

$$\lambda = \frac{1}{\frac{2\beta(1-r)^2D}{(\alpha - i_c^L)} - 1} \quad (6.5)$$

Thus the proportion of lending in Periphery will be a positive function of the maximum possible return in Periphery, relative to the return on Centre loans, i_c^L , and a negative function of the degree of monopoly power in Periphery, represented by β . The more backward is Periphery, the lower will be the maximum interest payable on a loan (reflecting the maximum returns on investment according to expectations held with any confidence) and the greater will be the local monopoly power of any financial institution located there. α will include a premium for lender's risk, which will be higher the more backward the region and the more cautious the branch manager.⁴⁴ Thus, barring the discovery of a valuable

natural resource, say, which would allow a very high α , the availability of bank lending is a positive function of level of development or per capita income.

The base, total deposits, on which the bank makes the allocation decision has been taken as given. But the bank will be concerned with future profits as well as current profits, and the lending allocation decision will have implications for future profits which must be taken into account. Suppose there is an injection of new reserves, ΔR , into the banking system from the central monetary authority. As a result of the decision as to how to allocate new loans, new deposits will be created in Centre and Periphery, with the different associated velocities (and thus operating costs) and cash drains.

Taking two extreme cases, suppose the entire addition to reserves were allocated to Periphery, resulting in no additional transactions with Centre. Then the traditional deposit multiplier would apply, increasing Periphery deposits by ΔD_p as follows:

$$\Delta D_p = \frac{\Delta R}{r+c_p} \quad (6.6)$$

where c_p is the cash-deposit ratio in Periphery (assuming that there is an excess demand for deposits and loans which allows the full multiplier to take effect). Costs would increase by $tV_p \Delta D_p$. If the entire increase in lending, rather, occurred in Centre, then the corresponding increase in Centre deposits would be:

$$\Delta D_c = \frac{\Delta R}{r+c_c} \quad (6.7)$$

where c_c is Centre's cash-deposit ratio, and costs would increase by $tV_c \Delta D_c$.

When discussing relative demand for money assets in Chapter 5, it was concluded that Periphery's cash-deposit ratio would be higher than Centre's. Thus, the overall increase in deposits, according to equations (6.6) and (6.7) would be greater if all lending occurred in Centre. From equation (6.4) profits are a positive function of total deposits (until deposits are so large that lending in Periphery drives the rate of return, i_p^L , down to i_c^L , at which point λ becomes zero for profit maximisation). Thus, in this extreme example, a profit-maximising bank will inject more lending into Centre than otherwise in order to increase its base faster. This behaviour is modified to some extent however by the relative increase in cheque processing costs resulting from a greater concentration of deposits in Centre with its higher velocity, V_c . (In practice, also, the demand for loans function in Centre will not be perfectly elastic, and i_c^L then would have to fall to induce the full multiplier increase in lending.)

But unless the two regions are each closed, interregional transactions will arise as a result of an increase in bank lending, and deposits in each region. Indeed, even without a change in total reserves there will be continuous flows between the regions; the banking system is the conduit for all the balance of payments flows discussed earlier in this chapter. For a nationwide banking system, all interregional flows occur within that system. But net inflows into Centre, say, will reduce the total drain into currency holdings (and increase transactions costs) thus affecting the overall scale of the banking system, and its profitability in total and per unit of deposit. Otherwise, net flows between regions should not directly affect the lending allocation decision:

if leakages are high out of Periphery into Centre, then net reserve flows following increased lending in Periphery will reduce the scope for a higher currency drain to Periphery. If, however, large net outflows reflect a growing lack of confidence in domestic Periphery assets and a reduced demand for its output, then the bank's perception of rates of return on lending to Periphery will be correspondingly reduced, and thus lending reduced.

Indeed, outward net flows of private sector funds from Peripheral economies are likely under both favourable and unfavourable economic conditions. If exports are strong, then direct investment in Periphery is encouraged, and so also is bank lending (perceived returns having increased). But the propensity to import capital goods and other inputs and consumer goods when economic expansion is underway is very high, markedly reducing, if not eliminating, the net inflow. If export demand is weak, on the other hand, imports will also fall, but direct investment funds and bank credit will be discouraged by low perceived returns. Further, increasing liquidity preference in Periphery as a result of poor economic performance, will encourage residents to sell local assets (financial or real) in favour of those available in Centre which have a higher liquidity premium; Periphery residents will already hold a relatively high stock of Centre assets because of their relatively high liquidity preference. The net outflow of funds will be correspondingly increased.

The net outflow of funds through the banking system may thus be viewed, in broad terms, as negative function of per capita income, increasing with any short-run crises of confidence. But, the fact that net outflows from Peripheral regions need not, as

such, substantially affect the lending allocation decision of a nationwide bank should not be taken as implying that lending in Peripheral regions is necessarily benefited by a bank with a national structure. To form a judgement on that question, the outcome of a regionally-segmented banking system must be considered.

b) Inter-Economy Capital Flows Between Banks

The alternative formulation to be investigated here refers again to a closed system of two economies, Centre and Periphery, but with one bank in each economy (representing the two banking systems). This configuration can represent either a unit banking system within one country or else an international banking system.

The balance sheets of the two banks are made up as follows. The Periphery bank's liabilities consist of deposits, D_p , which earn interest at the rate i_p^D , circulate at a rate V_p with cheque processing costs a proportion, t_p , of transactions. Assets include statutory reserves held as a proportion r_p of deposits; these reserves are held with the Centre bank and earn an interest rate of i_c^D . Remaining assets are allocated between local loans (or advances) L_p^P (the superscript 'p' denoting a loan by the Periphery bank) earning an interest rate i_p^L but involving transactions costs at a proportion ℓ_p of L_p^P , and marketable securities issued in Centre, S_c^P . These securities earn a rate of interest i^S and are liquid relative to local Periphery loans; brokerage costs are paid at a proportionate rate of \underline{s} . The profit function of the Periphery bank, π_p , is thus as follows

(including a fixed cost component, \bar{C}_p , as before):

$$\pi_p = (i_p^L - \ell_p)L_p^D + (i^S - s)S_c^D + (i_c^D r_p - i_p^D - t_p V_p)D_p - \bar{C}_p \quad (6.8)$$

The Centre bank's liabilities include deposits by its own residents, D_c , plus the reserves of the Periphery bank, $r_p D_p$, earning interest at i_c^D and costing $t_c V_c$ per unit of deposit for cheque processing. The bank's assets are divided among reserves (held with the central monetary authority at a statutory proportion r_c of deposits, earning interest at the rate i^R), loans to Centre residents, L_c^C (earning interest at the rate i_c^L , and costing a proportion ℓ_c to process) and to Periphery residents, L_p^C (earning interest at the rate i_p^L , and also costing a proportion ℓ_c to process). Including the fixed cost item, \bar{C}_c , the Centre bank profit function, π_c , is as follows:

$$\pi_c = (i_c^L - \ell_c)L_c^C + (i_p^L - \ell_c)L_p^C + (i^R r_c - i_c^D - t_c V_c)(D_c + r_p D_p) - \bar{C}_c \quad (6.9).$$

Lending behaviour according to this model will differ from that according to the nationwide bank model in several important respects. First, because each bank is located only in one economy, its knowledge of the other's market is less than if there were local offices in both economies. Accordingly, the less sophisticated Periphery bank does not lend directly to businesses and households in Centre, but diversifies its portfolio by purchasing bonds, which are issued in the financial centre (in Centre) and are highly liquid relative to local loans. Any lack of confidence in Periphery, which increases the expected default risk on loans and also signals reserves losses for the Periphery bank, encourages the Periphery bank to switch into

Centre marketable securities. Because of their liquidity also relative to Centre loans, the securities earn a lower rate of interest than i_c^L . Because of this difference in returns, comparing the profit-maximising behaviour of the Periphery bank with a nationwide bank, as represented by equation (6.5) above, the preferred portfolio would include more lending in Periphery.

It is assumed that the larger scale of the Centre bank's operations and the relatively greater liquidity of loans in Centre (and the collateral backing them) means that the Centre bank holds no securities other than reserve assets. (This is an oversimplification, but as it would hold less securities on average than the Periphery bank, the extreme position is used here to represent that relative position.)

Because it has no branch presence in Periphery, the Centre bank has less contact with economic developments there, or knowledge of the economic structure. The expectation of extraordinarily high returns (from oil production, for example) overcomes uncertainty and information problems, but the 'prototype' Peripheral economy does not generate such optimistic expectations, and the premium for lender's risk is accordingly high. The excess of i_p^L over i_c^L must therefore be higher by that amount of risk premium, thus reducing the Centre bank's preferred proportion of lending in Periphery.

Second, each bank's deposit base is now crucially tied to the leakage rate into the other economy (as well as to its own leakage rate into currency holdings and reserves). Centre's deposit base regains a proportion of any deposit loss to

Periphery as a result of the required increase in Periphery's reserves deposits, but otherwise net balance of payments leakages reduce bank profitability regardless of relative rates of return.

An extension of traditional multiplier analysis is unfortunately not very helpful here because, being an equilibrium concept, it can only measure changes between steady states. While it is possible to discuss interregional or international flows by means of multipliers,⁴⁵ this method is not used here. Rather the analysis will concentrate on the multiplier process itself, to see how financial behaviour (and, in Chapter 7, real behaviour) adjusts to the process. Since, in practice, an economy is only for a short time on any path to equilibrium before being shifted off onto another, the first few rounds of the multiplier process are the most important.⁴⁶ A more full discussion of the use of multipliers in this context is set out in Appendix 1.

A set of numerical examples is now employed to demonstrate the effect on each bank's deposit base of inter-economy flows. (The examples are expressed in mathematical form in Appendix 1.) The two banks start off with a small net outflow from Periphery. Gross outflows are designated A_c from Centre and A_p from Periphery. They are made up of two components:

- (1) trade flows, at the rate of 20% of Centre deposits per period to pay for imports from Periphery, and 40% of Periphery deposits to pay for imports from Centre;

- (2) capital flows resulting from Centre bank lending to Periphery and Periphery bank purchases of Centre securities; on the basis of the type of asset-allocation analysis conducted above, in terms of relative rates of return, Centre bank decides to allocate non-reserve assets to lending in Centre and Periphery in the ratio 2/3:1/3, and Periphery allocates its non-reserve assets to lending in Periphery and purchase of Centre securities according to a 1:1 ratio.

Centre bank is required to hold reserves of 10% of total deposits and Periphery bank must hold 20% of deposits as reserves.⁴⁷ Flows out of the banks' reserve base into currency are designated C_c and C_p , respectively, with Centre having a cash-deposit ratio of 5% of Centre deposits, D_c^C , and Periphery 10%.⁴⁸ The Periphery bank holds all its reserves (including excess reserves, E_p) with the Centre bank and are shown in the column D_p^C alongside other Centre deposits D_c^C . Changes in D_p^C thus reflect the 'below-the line' payments balance between the two economies, being the obverse of $(A_p - A_c)$, the 'above-the-line' balance. This 'two-tier' relationship between the banks, with Periphery reserves consisting of deposits with Centre bank, approximates to the relationship between a rural bank in the U.S. and its correspondent city bank, and also between the central monetary authority of a small developing country and that of a reserve-currency issuing country. Further it may reflect to some extent the relationship between the rural branches of a nationwide bank and the Head Office; each have different lending allocation criteria, reserves are in effect held at Head Office, and interregional flows go through the Head Office books.

Consider first a situation depicted in Table 6.1 where the two banks start off with the same reserve holdings at 20 units, with no excess reserve ($E_c = 0 = E_p$). Periphery deposits, D_p^D , are lower at 100 units than Centre's own deposits, D_c^C , at 180 units, because of the difference in reserve requirements. Periphery starts with a payments deficit, since its imports at 40% of 100 exceed Centre's imports at 20% of 180. The government then gives unconditional grants to customers of each bank, adding 10 units to the reserves and deposits of each bank. Periphery holds these excess reserves initially with Centre bank adding a further 10 units to Centre bank's deposits and reserves. Since the system is closed and the only reserve loss from Periphery is to Centre (other than currency drain) the Centre bank continues to hold all reserves in the banking system.

In this and the following tables, numbers are rounded to the nearest 0.5. In the case of Periphery, deposits D_p^D are not equivalent to total liabilities (and thus not equal to total assets) because transactions in Centre securities, S_c^D , are treated as items in transit, not subject to currency or balance of payments leakages, c_p and $a_{pc} k_p$, respectively. Centre loans to Periphery residents, L_p^C , in contrast are subject to leakages and appear in the D_p^C total, since it is assumed that the Periphery borrowers hold accounts with the Centre bank.

Periphery moves into balance of payments surplus (measured by $A_p - A_c$) in the third round; Centre bank has increased its lending to Periphery out of its large excess reserves, and also Centre residents increase imports from Periphery. But by the sixth round, Periphery is back into a deficit again; by then its own

Table 6.1 Reserves Injection into Each Bank

(E) C	R _C	L _C ^C	L _P ^C	D _C ^C	+ D _P ^C	C _C	A _C	(E) P	R _P	L _P ^P	S _C ^P	D _P ^P	C _P	A _P
0	20	120	60	180	20	0	36	0	20	40	40	100	0	40
18	40	120	60	194	26	0.5	39	5	26	40	40	106	0.5	42.5
15.5	39	132	66	215	22	1	49	1	22	42.5	42.5	104.5	0	44.5
13	38	142	71	225	26.5	0.5	50	4.5	26.5	43	43	109.5	0.5	44.5
9.5	37	151	75.5	244	31.5	1	53.5	8	31.5	45	45	116.5	0.5	48.5
8	35.5	157.5	78.5	247.5	27	0.5	52.5	2	27	49	49	125	1	54
6	34	163	81	256.5	25.5	0.5	54	1	25.5	50	50	123.5	0	50.5
.
.
.
.

Table 6.2 Reserves Injection into Each Bank; Lower L_P^P:S_P^P

(E) C	R _C	L _C ^C	L _P ^C	D _C ^C	D _P ^C	C _C	A _C	(E) P	R _P	L _P ^P	S _C ^P	D _P ^P	C _P	A _P
0	20	120	60	180	20	0	36	0	20	20	60	100	0	40
18	40	120	60	194	26	0.5	39	5	26	20	60	106	0.5	42.5
15.5	39	132	66	215	22	1	49	1.5	22	21	64	103	0	45
13	38	142.5	71	225.5	26	1	50	4.5	26	21.5	65	107.5	0.5	44
10	36.5	151	75.5	231.5	31.5	0	51	8.5	31.5	22.5	68.5	114	0.5	49
8.5	36	157.5	79	239.5	33	0.5	51	9.5	33	24.5	75	117.5	0.5	53.5
7	35	163.5	81.5	249.5	30.5	0.5	52.5	8	30.5	27	82	117.5	0	52
.
.
.
.

expansion has resulted in a much faster increase in imports, added to outflows associated with securities purchases. Lending in Periphery has increased over these rounds (although not as fast as lending in Centre) but the imminent reserves loss will require a rapid curtailment of Periphery bank's lending activity. Meanwhile deposits in Centre bank, the basis for bank profits, have increased by 42.5% compared with 23.5% in Periphery. Centre still has excess reserves, and expectations of additions from its payments surplus with Periphery, so that another bout of lending and deposit expansion is about to commence.

It has already been suggested that overall, more credit may be available to Periphery under a segmented banking system, at least from the Periphery bank, because of the inaccessibility of high return credit demand in Centre; the Centre bank in turn will however tend to lend less in Periphery because of the perception of lender's risk increasing with distance from the financial centre. But it is also in the interests of the Periphery bank as a profit maximiser to protect its deposit base, i.e. minimise leakages into Centre. Table 6.2 shows the outcome if a higher proportion (75%) of Periphery's non-reserve assets were allocated to Centre securities. Periphery's deposits are lower throughout than in Table 6.1, although the balance of payments is stronger and Periphery still has large excess reserves after the seventh round. This outcome relative to Table 6.1 represents a greater degree of caution on the part of the Periphery bank, or a situation where Periphery bank's confidence in the local economy is reduced, causing a shift in allocation away from lending in Periphery.

Similarly, the Centre bank would only reduce profits, at given interest rates, by reducing the proportion of its lending to Centre residents. Table 6.3 depicts the situation where that proportion is reduced to $1/2$ from $2/3$ in comparison with Table 6.1, resulting in lower deposit growth as well as credit growth in Centre. However, deposit and credit growth in Periphery are higher than Table 6.1, and again, as in Table 6.2, its balance of payments position is stronger and excess reserves higher.

Further, it is for the same reason in the interests of the Periphery bank to select for loans those projects which hold prospect of strong local linkage effects, thus building up the bank's deposit base. A national bank of course also is concerned with building up its deposit base, but this would be a relatively stronger concern for a bank operating only in Periphery.

It was suggested that Table 6.2 could represent a situation of increased liquidity preference on the part of the Periphery bank. Suppose the banks' customers' liquidity preference also increases, expressed as an exchange of Periphery assets for Centre assets. This will increase the rate of outflow out of deposits, A_p . Suppose that rate increases from 40% to 50% per period. The outcome is shown in Table 6.4 which otherwise is the same as Table 6.2. The growth of Periphery's deposits and loans is much slower than in Table 6.2, and is indeed negative for two periods because of the increased rate of outflow. Only when the Periphery bank sells Centre securities in the fourth and fifth rounds does the balance of payments move into a significant surplus,

Table 6.3 Reserves Injection into Each Bank; Lower $L_c^C:L_p^C$

(E) E_c	R_c	L_c^C	L_p^C	D_c^C	D_c^P	C_c	A_c	(E) E_p	R_p	L_p^P	S_p^P	D_p^P	C_p	A_p
0	20	90	90	180	20	0	36	0	20	40	40	100	0	40
18	40	90	90	194	26	0.5	39	5	26	40	40	106	0.5	42.5
15.5	39	99	99	215.	22	1	52	1	22	42.5	42.5	104.5	0	44.5
13	38	107	107	222.5	29.5	0.5	52.5	7	29.5	43	43	112.5	0.5	45.5
10.5	37	113.5	113.5	228	36	0.5	52	11.5	36	46.5	46.5	122.5	1	52.5
8.5	35.5	118.5	118.5	238	34.5	0.5	52.5	9	34.5	52.5	52.5	127	0.5	57
6.5	34.5	122.5	122.5	250	30.5	0.5	54	5	30.5	57	57	128.5	0	55
.
.
.

Table 6.4 Reserves Injection into Each Bank; Higher Non-Bank Capital Outflow from Periphery to Centre

(E) E_c	R_c	L_c^C	L_p^C	D_c^C	D_c^P	C_c	A_c	(E) E_p	R_p	L_p^P	S_p^P	D_p^P	C_p	A_p
0	20	120	60	180	20	0	36	0	20	20	60	100	0	40
18	40	120	60	194	26	0.5	39	5	26	20	60	106	0.5	53
15.5	39	132	66	225.5	11.5	2	51	-7	11.5	21	64	92.5	-1.5	50
13.5	38.5	142.5	71	238	13	0.5	52.5	-5.5	13	19	59	93	0.5	41.5
11	37.5	151.5	75.5	240	23.5	0	52.5	3	23.5	17.5	55	102	0.5	47
9.5	37	159	79	245.5	28.5	0.5	52.5	7	28.5	18.5	57	108	1	56
7.5	35.5	165.5	82	258	24	0.5	54.5	3	24	20.5	62	105.5	-0.5	58
.
.
.

thereafter to return to a deficit position. Deposits in the Centre bank have risen faster than in Table 6.2, even taking into account lower reserves deposits of the Periphery bank.

So far, the lending allocation decision has been independent of the multiplier process itself. A further scenario is now considered whereby a financial flow encourages a change in that allocation. Starting from the first position in Table 6.1, suppose the central authority injects 20 units of new-money-financed expenditure into Periphery. Suppose this action does not alter expectations about rates of return in Centre, but increases expected returns in Periphery, so that both banks increase their lending allocation to Periphery. Suppose the Centre bank changes the $L_C^C:L_P^C$ ratio from 2/3:1/3 to 1/2:1/2 and the Periphery bank changes the $L_P^P:S_C^P$ ratio from 1/2:1/2 to 2/3:1/3. The outcome is depicted in Table 6.5, starting with an addition of 20 units to Periphery's reserves and deposits and a reduction in Centre offset by the Periphery bank's initial increase in reserve deposits.

Although after seven rounds total deposit levels are similar to those in Table 6.1, when the injection was equally split between the two regions and expectations were unaltered, Periphery's deposits grow much faster and stay at a higher level longer in Table 6.5. Lending to Periphery is also higher because of the change in lending allocation decision. Periphery still has excess reserves after seven rounds, but the balance of payments surplus is smaller because of the increased outflows generated

Table 6.5 Reserves Injection into Periphery Bank; Falling $L_c^C:L_p^C$, Rising $L_p^P:S_p^P$

(E_c)	R_c	L_c^C	L_p^C	D_c^C	D_p^C	C_c	A_c	(E_p)	R_p	L_p^P	S_c^P	D_p^P	C_p	A_p
0	20	120	60	180	20	0	36	0	20	40	40	100	0	40
18	40	120	60	184	36	0	37	13	36	40	40	116	0	40
15	38.5	129	69	211.5	25	0	37	2.5	25	48.5	44.5	113.5	1.5	46.5
12	37	136.5	76.5	223.5	26.5	1.5	51.5	3	26.5	50	45.5	116.5	0	50
10.5	36.5	142.5	82.5	230.5	31	0.5	52	6.5	31	52	46.5	123	0	47.5
8	35	147.5	87.5	238	32	0.5	52	6.5	32	56.5	48.5	128.5	1	50
6.5	34	151.5	91.5	246.5	30.5	0.5	52.6	4	30.5	61	50.5	131.5	0.5	53.5
.	.	.	.	.	.	0.5	53.5	.	.	.	.	.	0	54.5
.
.
.

Table 6.6 Reserves Injection into Periphery Bank; Unchanged $L_c^C:L_p^C$ and $L_p^P:S_p^P$

(E_c)	R_c	L_c^C	L_p^C	D_c^C	D_p^C	C_c	A_c	(E_p)	R_p	L_p^P	S_c^P	D_p^P	C_p	A_p
0	20	120	60	180	20	0	36	0	20	40	40	100	0	40
18	40	120	60	184	36	0	37	13	36	40	40	116	0	40
15	38.5	132	66	211.5	25	0	37	2.5	25	46.5	46.5	111.5	1.5	46.5
12.5	37.5	142	71	227.5	23	1.5	48.5	1	23	47.5	47.5	110.5	-0.5	51
10.5	36.5	150.5	75	233.5	28.5	1	50.5	5	28.5	48	48	116.5	0	45
9	36	157.5	78.5	240.5	31.5	0	50.5	7	31.5	50.5	50.5	122	0.5	47
7	35	163.5	81.5	249	31	0.5	51.5	6	31	54	54	125	0.5	51.5
.	.	.	.	.	.	0.5	53	.	.	.	.	.	0.5	53.5
.

by the higher deposit levels. Centre deposits grew somewhat slower than in Table 6.1, although fed by inflows from Periphery, including Periphery reserves. But, in total over this period, the money supply was higher than when the funds were distributed equally between the two economies.

To find out how far this difference is due to the distribution itself, and how far to the change in expectations, Table 6.6 sets out the situation where all 20 units are injected into Periphery, but are not accompanied by expenditure, say, so that expectations are not changed. The outcome is intermediate to Table 6.1 and Table 6.5: deposit growth in Periphery occurs faster than in Table 6.1, but not as fast as when proportionately more lending occurs in Periphery. Lending in Periphery is still higher during the seven rounds, than with the equal distribution. Lending in Centre is very similar to Table 6.1, however, in spite of lower Centre deposit (D_C^C) growth, because of the higher Periphery reserve deposit growth.

Finally, all these examples have been worked out in the case of the Periphery's bank's reserves being held with the Centre bank. It is interesting to consider the implications of each holding their own reserves with a third authority, not only because this is a reasonable alternative for domestic banks, but also because it is consistent with proposals to eliminate the 'dollar overhang' and have all international settlements conducted in terms of international reserve assets such as SDR. Under such a system, non-U.S. central banks would in effect place reserves with the I.M.F. rather than with U.S. banks.

Table 6.7 replicates the situation in Table 6.1 , but with no Periphery reserve deposits with the Centre bank. The Periphery bank's asset and liability growth are on average much as in Table 6.1, but Centre's deposit and lending growth is much lower than before. Periphery suffers primarily through the reduction in the Centre bank's lending in Periphery, rather than through any lesser growth of its own assets, and a somewhat weakened balance of payments position as a result (although starting in payments balance in the first round).

It is reasonable however to suppose that such an arrangement would be accompanied by a higher stock of reserves to allow for the relatively greater requirements of the banking system. Thus the appropriate comparison is between the share of total assets in Centre and Periphery compared with the other systems where Periphery banks held its reserves with the Centre bank. In the case of independent reserves in Table 6.7, the Periphery's bank's share of total assets rises from one-half in the initial round to 55% in the seventh round. In the Table 6.1 case, the Periphery's bank's share falls from one-half to 45%. If the total monetary base, then, can be increased according to the requirements of the banking system (by the central bank domestically or the I.M.F. internationally) segmentation of the banking system would seem to promote a more similar rate of growth of financial systems in economies at different stages of development.

Conclusion

It has been shown that the money supply to a region or nation

Table 6.7 Reserves Injection into Each Bank; No Periphery Bank Reserves held with Centre Bank

(E _c)	R _c	L _c ^C	L _p ^C	D _c ^C	C _c		(E _p)	R _p	L _p ^P	S _c ^P	D _p ^P	C _p	
					C _c	A _c						C _p	A _p
0	20	120	60	200	0	40	0	20	40	40	100	0	40
9	30	120	60	210	0.5	42	8	30	40	40	110	0	44
9.5	31.5	126	63	220.5	0.5	47	5	27	44	44	111	1	48.5
9.5	32.5	132.5	66	231	0.5	49	3	25.5	46.5	46.5	112	0	47.5
6.5	30.5	139	69	238.5	0.5	50.5	4	27	48	48	115	0	47.5
3	27	143.5	71	241.5	0	50.5	5.5	29.5	50	50	119.5	0.5	50
2	26.5	145.5	72	244	0	50	5	29.5	52.5	52.5	122	0	51.5
.
.
.

responds both to real economic developments and to differences in institutional structure. It can be characterised as being in general a positive function of per capita income on the following grounds.

(1) The elasticity structures associated with developing economies and developed economies render the former more trade deficit-prone during periods of export growth, offsetting the direct investment inflows which are attracted by that growth; when developing economy export growth is weak, imports are also weak, but there may be net direct investment outflows; during periods of export growth in developed economies (periods which are more long-lasting and stable than for developing countries, again for elasticity reasons and also industry structural differences), import growth is less strong and favourable direct investment outflows add to the resulting increase in monetary base.

(2) Portfolio capital flows tend to be disequilibrating in cases of trade and direct investment flows imbalance, except when that imbalance is widely viewed as temporary; while developed economies are more subject to large flows of short-term capital because of greater capital market integration, these flows are more likely to be equilibrating than for developing economies.

(3) The banking system is the conduit for these flows, but also determines flows when deciding on the structure of its own assets. Because of the greater risks of reserves variability, banks in developing economies will have a relatively high liquidity preference which militates against local lending. Further the high currency

drain and reserve requirements for such banks limit the potential deposit multiplier. The distribution of assets between banks in the two types of economy will further depend on the institutional structure, and also on the state of expectations in each about their own and each others' economies. The more integrated the banking structure, with Peripheral banks holding reserves with Centre banks, the more likely it is that the supply of credit will be distributed more in Centre than in Periphery (although much depends on the asset structure preferred by Centre banks).

For purposes of juxtaposition with the demand equation in chapter 5, this supply relationship may be expressed in a simple, linear form:

$$\frac{M^S}{Y} = h + j \left(\frac{Y + \Delta Y^E}{N} \right) \quad h, j > 0 \quad (6.10)$$

The flows of funds associated with the public sector may be expected to alter this relationship to the extent that they are redistributive. The 'automatic' element of these flows was not clearly redistributive; but equation (6.10) can be redesignated as follows, the change of slope reflecting 'automatic' public sector activity:

$$\frac{M^S}{Y} = h + j' \left(\frac{Y + \Delta Y^E}{N} \right) \quad h, j' > 0 \quad (6.11)$$

$j' < j$ if this activity promotes a more equal income distribution.

Discretionary or ad hoc government activity with respect to regions and nations is certainly, to varying extents, redistributive, responding to particular developments. Suppose there is a sudden deterioration in expectations concerning real activity in a

developing economy (a negative value for ΔY^E). This would be accompanied by an outward flight of capital on the part of residents of the economy, the banks, and residents of other economies. Given the greater incidence of such deteriorations in expectations, sensitivity to them is likely to be greater than to improvements, so that there may be an asymmetry in the capital flow response. On the other hand, the redistributive activities of the public sector serve to lessen the reserves outflow resulting from such a situation, and to reduce the asymmetry between expectations in the two directions. Similarly, while short-run capital flows may be more responsive to expected expansion in Central economies than expected decline, there will be an increased redistributive outflow to Periphery when the two economies are expected to diverge.

As with the demand function, the short-run supply functions can be adapted to incorporate influences other than those represented by expected income levels, as follows:

$$\frac{M^S}{Y} = h + j' \left(\frac{Y + \Delta Y^E}{N} \right) + G + ki \quad (6.12)$$

G represents the discretionary reactions of the public sector, adding money supply inflows and possibly also altering expectations when a decline in economic activity is expected. An interest rate term, i , is introduced (weighted by a positive constant, k) to reflect money supply responses to general shortages or excesses of money. In general, an increase in the rate of return on national or international bonds, say, calls forth an increase in supply, quite apart from relative 'real' developments in different economies.

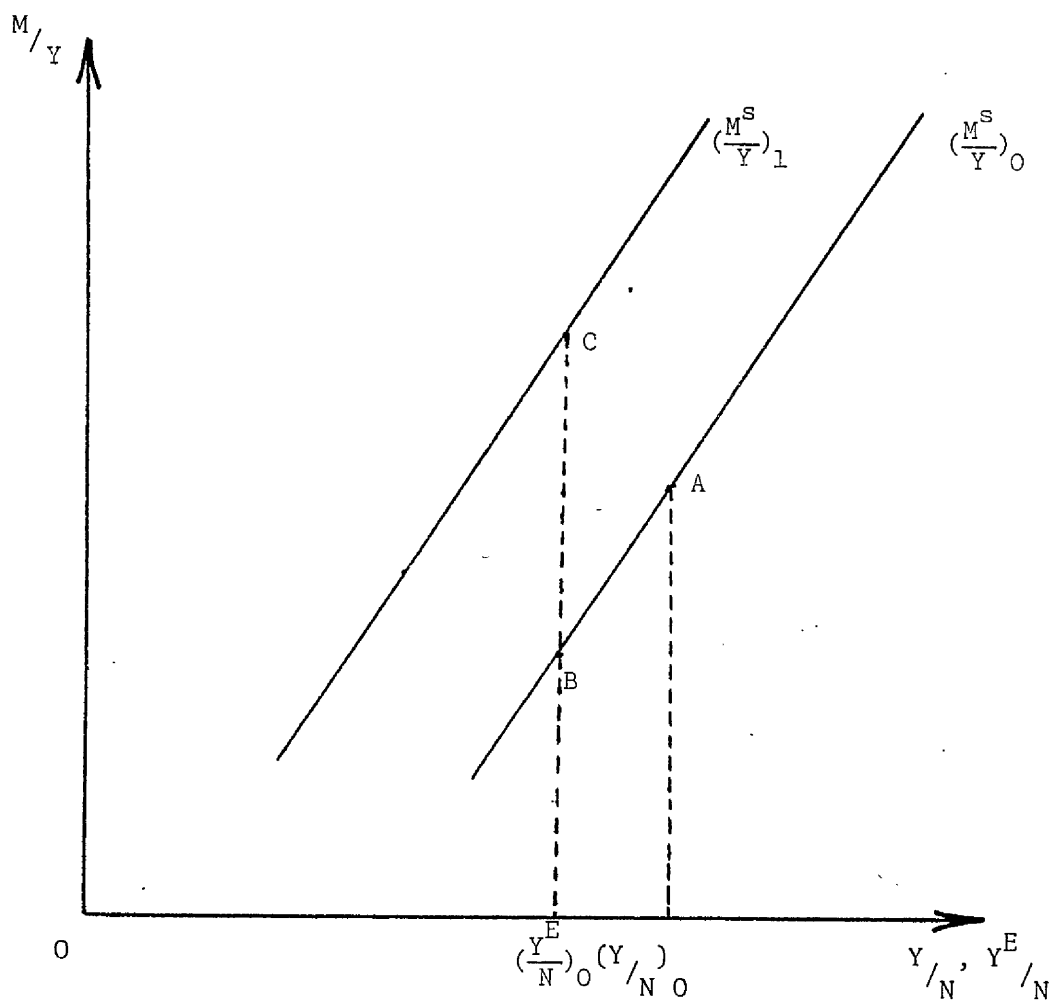
A series of supply functions can be shown diagrammatically in terms of $(\frac{M}{Y}, \frac{Y}{N})$ and $(\frac{M}{Y}, \frac{Y^E}{N})$ space respectively, as in Figure 6.1.

An economy at a particular per capita income level, say $(\frac{Y}{N})_0$, starts off at point A on one supply curve, say $(\frac{M^S}{Y})_0$. Suppose expectations had developed of a drop in per capita income to, say, $(\frac{Y^E}{N})_0$. Money supply would then fall down $(\frac{M^S}{Y})_0$ to point B. If, however, the public sector reacted by injecting money into the economy (increasing G), then the supply curve would shift to $(\frac{M^S}{Y})_1$, where money would be available in the amount represented by point C. A similar result could be expected if the fall in supply to B put upward pressure on interest rates, attracting capital inflows to the economy.

In the next chapter, the demand conditions analysed in chapter 5, the supply conditions analysed in this chapter, and the interdependencies between them, will be considered together. The implications of these conditions for real output in Central and Peripheral economies will then be considered.

Figure 6.1

Money Supply Relative to Income by Per Capita Income Level



Footnotes

1. For a discussion of this point, see G R Dreese, 'Banks and Regional Economic Development'. Southern Economic Journal, Vol. 40 (Apr. 1974) pp.647-656.
2. See, for example, H G Grubel, Domestic Origins of the Monetary Approach to the Balance of Payments, Princeton Essays in International Finance No. 117 (Princeton: Princeton University Press, 1976).
3. J Williamson, 'Don't Surplus Countries Have Obligations?' The World Economy Vol. 1 (Oct. 1978), pp.419-426, for example, discusses the role of 'credit worthiness' in inhibiting the financing of a continued trade deficit as a country goes through the initial stages of the 'J-curve' following devaluation.
4. For a full discussion of dual-gap analysis, see A P Thirlwall, Growth and Development: with Special Reference to Developing Economies, second edition (London: Macmillan, 1978) chapter 13.
5. See M von N Whitman, International and Interregional Payments Adjustment: A Synthetic View, Princeton Studies in International Finance No. 19 (Princeton: Princeton University Press, 1967) for a recent exposition of this hypothesis which suggests a positive relationship between exports and MEC, and thus investment.
6. R Prebisch, The Economic Development of Latin America and its Principal Problems (New York: Economic Commission for Latin America, UN Dept of Economic Affairs, 1950)
7. W Brandt (Chairman), North-South: A Programme for Survival, Report of the Independent Commission on International Development Issues (London: Pan 1980).

8. In particular, see N. Kaldor, 'The Case for Regional Policies', Scottish Journal of Political Economy, Vol. 17 (Nov. 1970), pp.337-348.
9. These features, which are common to most analyses of developing country trade, were first introduced to the field by R Prebisch, op.cit. in the context of highlighting the balance of payments effect of trade rather than the resource allocation effects.
10. E Lancieri, 'Export Instability and Economic Development: A Reappraisal', Banca Nazionale del Lavoro Quarterly Review, No. 125 (June 1978), pp.135-152.
11. See, for example, M J Flanders, 'Prebisch on Protectionism: An Evaluation', Economic Journal, Vol. 74 (June 1964), pp.305-326.
12. A P Thirlwall, op.cit. His conclusion is confirmed by A Pinto and J Knakal, 'The Center-Periphery System Twenty Years Later', in L E Di Marco (ed.) International Economics and Development (London: Academic Press, 1972), pp.97-134.

See also T Wilson, R P Sinha and J R Castree, 'The Income Terms of Trade of Developed and Developing Countries', Economic Journal, Vol. 79 (Dec. 1969) pp.813-832.
13. See T Wilson, 'The Price of Oil: A Case of Negative Marginal Revenue', University of Glasgow Discussion Paper in Economics No. 26 (Nov. 1978).
14. See, for example, S Weintraub, 'The Foreign-Exchange Gap of the Developing Countries', Princeton Essays in International Finance No. 48 (Princeton: Princeton University Press, 1965), pp.9-10.
15. The phrase was coined by Bhagwati on the basis of a pessimistic analysis of the relative demand elasticities for developed and developing country products. See J Bhagwati, 'Immiserizing Growth: A Geometrical Note', Review of Economic Studies, Vol. 25-26 (June 1958), pp.201-205.

16. See W M Corden, 'The Structure of a Tariff System and the Effective Protective Rate', Journal of Political Economy, Vol. 74 (June 1966), pp.221-237 for an elaboration of the concept of effective protection pioneered by C L Barber.
17. See R Vernon, 'The Product Cycle Hypothesis in a New International Environment', Oxford Bulletin of Economics and Statistics, Vol. 41 (Nov. 1979), pp.255-267 for a discussion of the international direct investment decisions of firms.
18. M von M Whitman, op.cit. for a recent exposition of the hypothesis.
19. See A Pinto and J Knakal, op.cit.
20. The relevance of import requirements to expenditure multipliers in the context of regional policy is stressed by T Wilson, 'The Regional Multiplier - A Critique', Oxford Economic Papers, Vol. 20 (Nov. 1968) pp.374-393.
21. This pattern is confirmed by the export growth data set out in World Bank, World Development Report 1979, although the more industrialised 'middle-income' countries are shown as enjoying somewhat faster (merchandise) export growth during 1960-76 than the developed countries.
22. T Scitovsky, Economic Theory and Western European Economic Integration (London: George Allen and Unwin, 1958)
23. J C Ingram, 'State and Regional Payments Mechanism', Quarterly Journal of Economics Vol. 73 (Nov. 1959), pp.619-632.
24. B Ohlin, Interregional and International Trade (Oxford: Oxford University Press, 1967).
25. See, for example, J A Frenkel and H G Johnson, 'The Monetary Approach to the Balance of Payments: Essential Concepts and

- Historical Origins' in J A Frenkel and H G Johnson (eds.) The Monetary Theory of the Balance of Payments (Toronto: University of Toronto Press, 1976), pp.21-45.
26. See Tables 9.8 and 10.6 in Chapter 8.
 27. This criticism has been voiced, among others, by R L Pfister, 'State and Regional Payments Mechanisms: A Comment', Quarterly Journal of Economics, Vol. 74 (Nov. 1960), pp.641-648.
 28. See R I McKinnon, Money and Capital in Economic Development, (Washington, D.C.: Brookings Institution, 1973) for a discussion of financial market segmentation in developing countries.
 29. See Ingram, op.cit.
 30. This argument has been put forward by, for example G Magnifico, European Monetary Unification (London: Macmillan, 1973), J M Fleming, 'On Exchange Rate Unification', Economic Journal, Vol. 81, (Sept. 1971), pp.467-488; and E Lizano, 'Integration of Less Developed Areas and of Areas on Different Levels of Development', in F Machlup (ed.), Economic Integration, Worldwide, Regional, Sectoral (London: Macmillan, 1976) pp.275-284.
 31. E Despres, C P Kindleberger and W S Salant, 'The Dollar and World Liquidity', in L H Officer and T D Willett (eds.) The International Monetary System: Problems and Proposals (Englewood Cliffs, N.J.: Prentice-Hall, 1969), pp.41-52, also W S Salant, 'Financial Intermediation as an Explanation of Enduring "Deficits" in the Balance of Payments', in F Machlup, W S Salant and L Tarshis (eds.) International Mobility and Movement of Capital (New York: N.B.E.R., 1972), pp.607-659.
 32. Purchase of government bonds need not be regarded as a net outflow if the funds finance government expenditure in the Peripheral regions. The role of the public sector in this regard is discussed in the next section.

33. See, for example, N Sargen, 'Commercial Bank Lending to Developing Countries', Federal Reserve Bank of San Francisco Economic Review, (Spring 1976), pp.20-31.
34. See, for example, D C Beek, 'Commercial Bank Lending to the Developing Countries', Federal Reserve Bank of New York Quarterly Review, Vol. 2 (Summer 1977), pp.1-8, I Kapur, 'An Analysis of the Supply of Euro-Currency Finance to Developing Countries', Oxford Bulletin of Economics and Statistics, Vol. 39 (Aug. 1977), pp.171-188, and P A Wellans, Borrowing by Developing Countries on the Euro-Currency Market (Paris: OECD, 1977).
35. See N Sargen, op.cit. and World Bank, World Development Report 1978 (Washington, D.C.; IBRD, 1978).
36. The equilibrating role of the Treasury accounts in each Federal Research District in the U.S., reflecting purchases and sales of government securities, is stressed by P C Hartland, 'Interregional Payments Compared with International Payments', Quarterly Journal of Economics, Vol. 63 (1949), pp.392-407 and N N Bowsher, J D Daane and R Einzig, 'The Flows of Funds between Regions of the United States', Journal of Finance, Vol. 13 (March 1958), pp.1-20.
37. See C P Kindleberger, International Economies, Second Edition (Homewood, Ill.: Richard D Irwin, 1958), p. 577. He qualified the dichotomy in the third edition (1963, p.622) and removed it altogether in the fourth edition (1968).
38. For a full description of these facilities, see A Crockett, International Money: Issues and Analysis (Sunbury-on-Thames: Nelson, 1977), chapter 12.
39. See chapter 10, pp. 385-387 for a discussion of the data relating to international assistance.

40. See, for example, G C Abbott, International Indebtedness and the Developing Countries (London: Croom Helm, 1979), chapter 3.
41. See, for example, D Avramovic et al., Economic Growth and External Debt (Baltimore: John Hopkins Press, 1964).
42. See G C Abbott, op.cit., Table 2.14.
43. Once national money supply changes are taken into account, this rate may be expected to change. We are concerned here more with the distribution of credit rather than its overall total, however, so for clarity of exposition the national interest rate structure will be treated as fixed. While it may be suggested that the interest rate structure of a nationwide bank is uniform for all regions, nevertheless the choice of rate within that structure, reflecting estimates of risk, size of loan, etc., allows significant disparities which may conform roughly to a regional pattern.
44. See H P Minsky, John Maynard Keynes (London: Macmillan, 1976) for a full discussion of lenders' and borrowers' behaviour under different expectational conditions. Further, a discussion of how the career structure of bank managers produces greater caution the smaller the branch is to be found in J T Sears, Institutional Financing of Small Business in Nova Scotia (Toronto: University of Toronto Press, 1972).
45. Multipliers are used to discuss institutional flows within a national economy by S C Tsiang, 'The Diffusion of Reserves and the Money Supply Multiplier', Economic Journal, Vol. 88 (June 1978), pp.269-284. The analysis is directly applicable to flows between financial institutions on a spatial basis.
46. This emphasis on the first few rounds of financial multipliers is adopted by R J Miller, The Regional Impact of Monetary Policy in the United States (Lexington, Mass.: Lexington Books, 1978).

47. Referring back to equations (6.6) and (6.7), the simple money multipliers for the two regions, a higher reserve ratio in Periphery implies a lower money multiplier. This point was made in the context of the Scottish banks, with reserve requirements differing from English banks (before 1971) by M Gaskin, The Scottish Banks: A Modern Survey (London: George Allen and Unwin, 1965), pp.192-200.
48. The ratio of currency to demand deposits is much higher than these sample ratios in the U.S. and the U.K.; see Tables 8.5 and 8.6. However, 'D' in this model represents total bank deposits, so that the ratios are correspondingly lower than for demand deposits only. The intention here is to demonstrate principles, however, rather than actual numerical results which apply to one economy.

Chapter 7. THE ADJUSTMENT PROCESS

Introduction

The last two chapters have attempted to demonstrate that, quite apart from the real rates of return which govern savings and investment, there are differences in purely monetary conditions between different types of economy. The purpose in this chapter is to work out the implications of these differences for the level and distribution of real output.

Both money demand and supply conditions reflect liquidity preference on the part of portfolio-holders of all kinds in all economies. Because of the characteristics of economies at different stages of development, the most liquid assets (real and financial) are those issued in Central economies. Further, financial returns in general are higher also in such economies, not only because of real technical progress, but also because of financial technical progress.¹ In terms of some standard classification of assets (defining money as M_1 or M_3 , for example) the income elasticity of demand for money relative to income is higher the lower the level of income, while the income elasticity of the supply of money relative to income is positive.

Further, a general burst of confidence in any economy, however ill-founded, will encourage asset holders in that economy to go illiquid to reap capital gains; at the same time it will invite an insurge of liquidity from other asset purchasers likewise seeking capital gain. On the other hand, a deterioration in expectations (caused by rumours regarding the closure of a crucial local business, say) will encourage resident asset holders

to go liquid to avoid capital loss; the money supply at the same time will be reduced as net capital outflows increase.

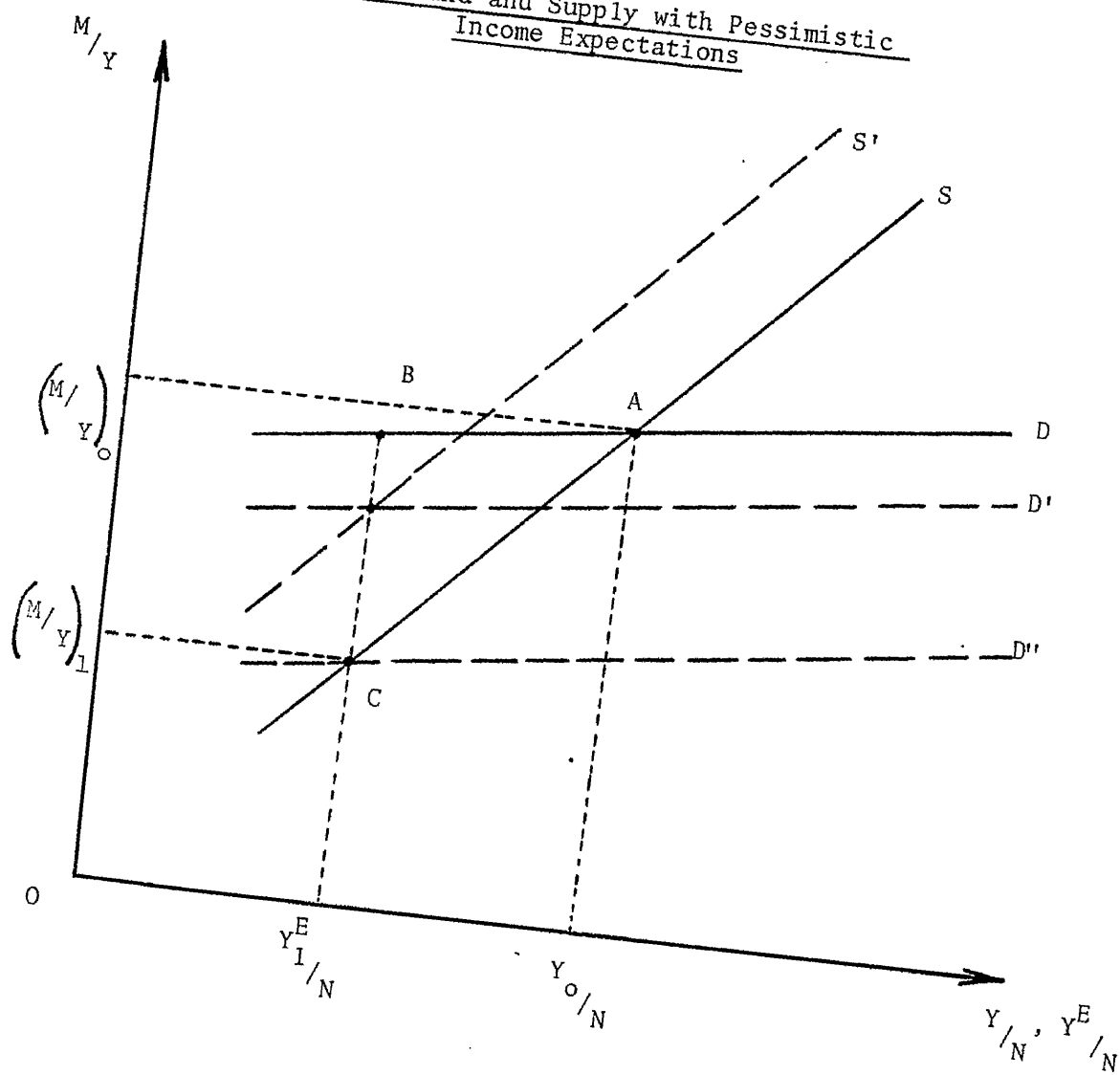
In short, then, the money supply of an open economy is elastic, but may be frustrating rather than accommodating any shift in preference. The major counteraction to such a potentially unstable situation is provided by public sector flows of funds into economies lacking liquidity and by the offsetting effect on expectations, of the fact that governments regard destabilising economic trends as politically unacceptable. Since expectations about the future of an economy are at least partially subjective, and yet are crucial to money demand and supply, political expectations play a central role.

A Diagrammatic Representation

The diagrammatic approach so far developed for representing in simple fashion the comparative money demand and supply conditions of Central and Peripheral economies can now be utilised to show their interaction. Only the short-run demand curves from Figure 5.1 are used here, along with the supply curves from Figure 6.1, to demonstrate the short-run developments which determine the long-run outcome. The successive points of intersection of the short-run curves will fluctuate around the long-run demand relation in Figure 5.1. This is not to imply that demand is satisfied in the long-run, but that supply factors determine the position on the demand curve i.e. the income level which can be reached with given money demand and supply conditions.

Consider, in Figure 7.1, an economy is at per capita income

Figure 7.1
Money Demand and Supply with Pessimistic
Income Expectations



level (Y_0/N) at point A, but expectations develop of a drop in output such that per capita income will fall to (Y_1^E/N) . Suppose the money market was initially in equilibrium at (Y_0/N) with supply equal to demand at $(M/Y)_0$. Demand for money now moves to B as the need for more liquidity is perceived relative to expected income, but supply moves down the short-run supply curve to C as capital flows out of the economy. The supply curve is the effective constraint, so that actual money holdings are now (M/Y_1) , for expected income at (Y_1^E/N) and actual income for the moment at (Y_0/N) .

There are three possible resolutions to this situation:

- (a) The traditional solution to excess demand for money: a rise in interest rates which shifts the supply curve up to S' and the demand curve down to D' , restoring the economy to equilibrium at income level (Y_1^E/N) where no excess demand remains. This solution requires first the possibility of movements in local interest rates independent of other economies' rates. Also, since rising interest rates in a situation of shaky economic expectations are likely to worsen those expectations, this may offer no effective resolution; interest rates could progressively rise without adequately stifling demand or enticing supply relative to income, i.e. expected income would fall below Y_1^E/N . Income would then have to adjust in order to equate demand and supply, and by more than if there had been no interest rate response.
- (b) The supply of money would fall short of demand for working capital purposes and for new investment, as well as for idle balances. The effect on productivity would confirm, and could worsen,

pessimistic expectations and actual per capita income would fall towards or even below (Y_1^E/N) , where a new short-run demand curve, D'' , would become operative. The pessimistic expectations would have been confirmed no matter how 'realistic' their initial grounds.

- (c) The public sector could take action, injecting new money into the economy (a positive G in equations (5.3) and (6.12)). The supply curve would then shift up to S'' , say, in Figure 7.2, and the demand curve to D''' . Supposing the injection took the form of a grant, say, to the business whose viability was in question, not affecting expectations about future output but only the supply of money. Then excess demand for money would fall to DE from BC . A smaller income adjustment would be required, say to (Y_2/N) , where a new short-run demand curve D^{IV} would be established through point F . Further, if the injection were accompanied by indications of further government support, or if the grant were to finance additional expenditure on infrastructure development, say, then the demand for money of the economy's residents might move along the demand curve to G . With the excess demand for money eliminated, income need only be reduced to (Y_3/N) . Indeed, if expectations of improved growth are generated by this government involvement, liquidity preference on the part of lenders and borrowers might be reduced sufficiently to create an excess supply of money.

The possible outcomes of the development of optimistic expectations are the converse of those discussed for pessimistic expectations. They are demonstrated in Figure 7.3

Figure 7.2

Money Demand and Supply with Pessimistic
Income Expectations and a Public Sector Response

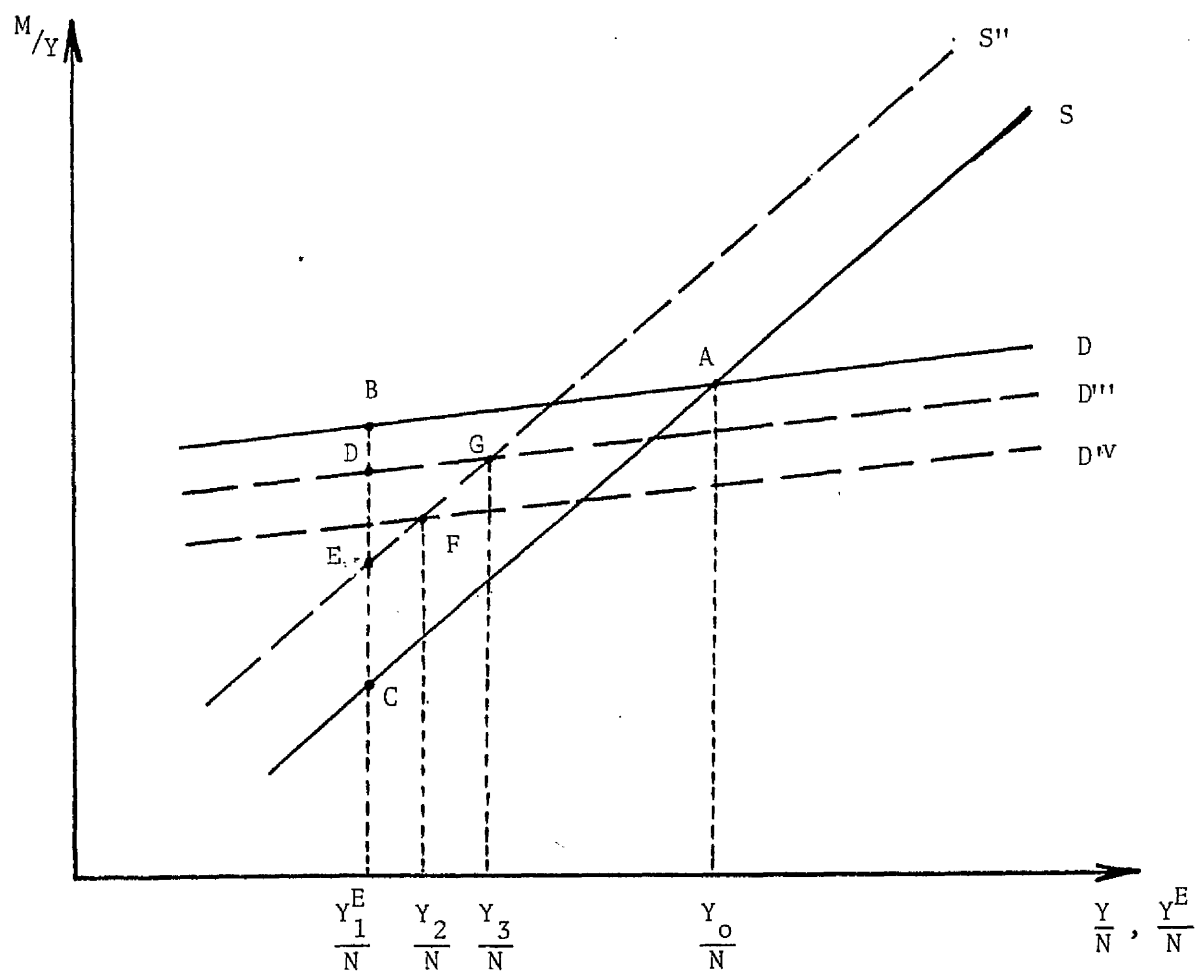
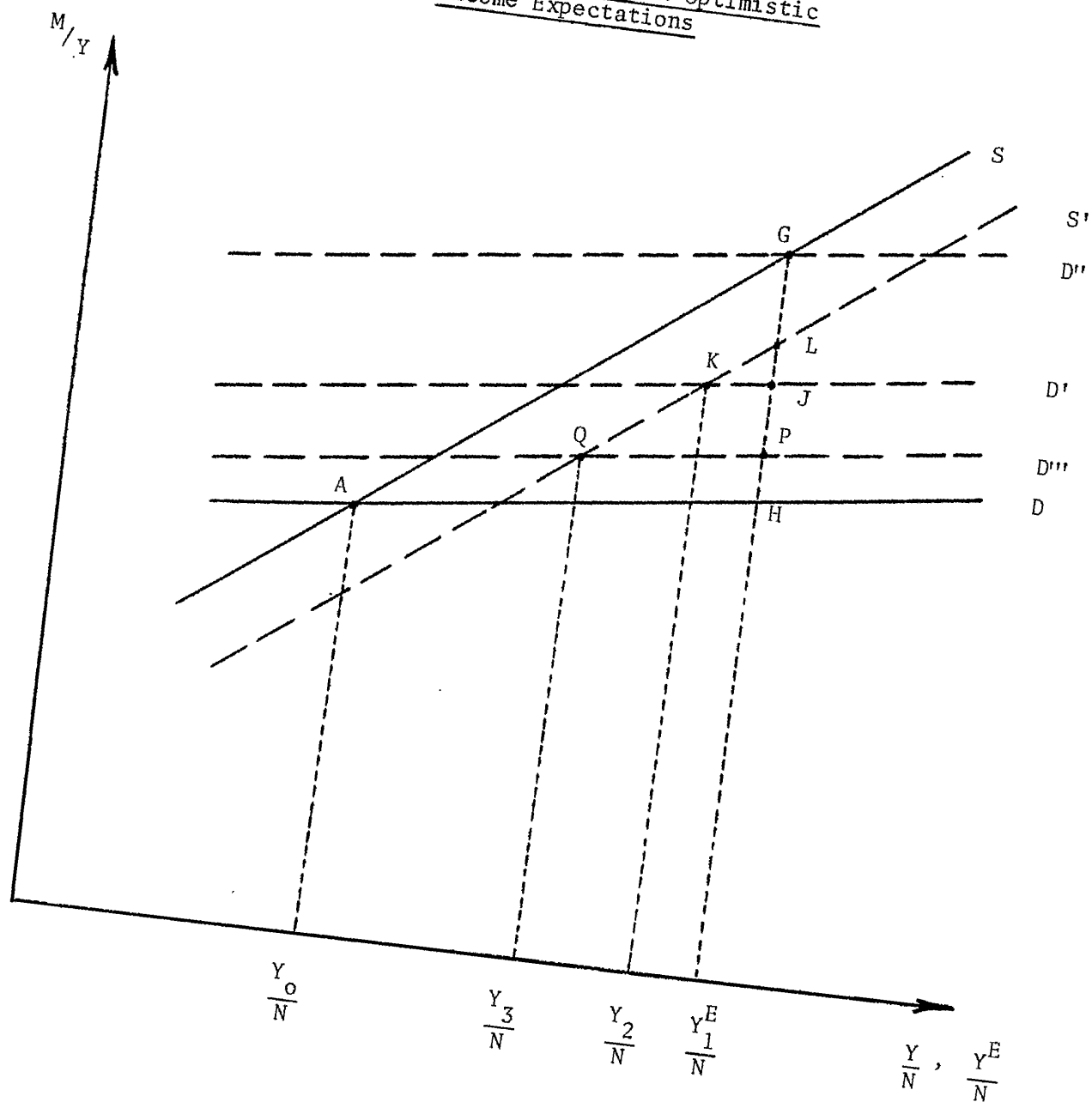


Figure 7.3
Money Demand and Supply with Optimistic
Income Expectations



- (a) If income is expected to increase from Y_0/N to (Y_1^E/N) , an excess supply of money, GH, emerges from reduced demand for money. If this put downward pressure on interest rates, the supply would be reduced to S' , demand increased to D' , and the economy restored to position K, where no excess supply remains. But reduced interest rates are likely to have an expansionary effect on real expenditure, reinforcing expectations of an income increase. Position K could not thus be maintained as expected income rose above (Y_1^E/N) . Upward income adjustment would be required to equate demand and supply.
- (b) The excess supply of money would fuel an expansion, fulfilling expectations of an income-increase to (Y_1^E/N) . A new short-run demand curve, D'' , would be established at this higher income level.
- (c) The government might take action to prevent overheating of the economy, specifically by reducing money expenditure. If it were purely a monetary action, like a reduction in money-financed transfer payments, supply would fall to S' , say, and demand would rise to D''' (G being negative), reducing excess supply to LP. A smaller income adjustment would then occur, say to (Y_2/N) , with a new short-run demand curve, D' , being established through point K. If the money supply reduction were accompanied by indications of further monetary tightness and/or were implemented by reducing money-financed government expenditure on local goods and services, then the demand for money might move back along demand curve D''' to position Q, where all excess supply has been eliminated and the income increase curtailed to $(Y_0/N, Y_3/N)$.

The question now is, which outcome is likely to prevail in the two types of economy under consideration, the Peripheral and the

Central. The major relevant differences relate to the general state of expectations regarding either type of economy and to the different role of interest rates.

Medium-term expectations regarding Peripheral economies are in general less optimistic than those regarding Central economies, by definition of the categories. There is a divergence-promoting element in market forces which, while counteracted by public sector action, conditions the confidence with which any optimism might be maintained regarding the Peripheral economies. This applies more particularly in the international than the subnational context, since at least in the Central economies, balanced regional development is given some priority. Further, since the majority of decision-makers as to the valuation of Peripheral assets and supply of credit are located in the Central economies, remoteness and the attendant information problems tend to promote an additional degree of caution. Finally, the circularity of pessimistic expectations reinforces them; collective pessimism, if not counteracted by effective interest rate changes, is self-fulfilling.

In general, the degree of capital market integration is higher among Central economies than Peripheral economies. Thus, while a situation of excess demand for or supply of money is more likely to cause an interest rate change in a Central economy, demand and supply are also more likely to respond to that interest rate change for a Central economy.

The income adjustment process will now be considered in more detail in the different contexts of developing country regions, developed country regions and the international economy.

(i) Developing Country Regions

Within a low-income developing economy, the degree of financial market integration between Central and Peripheral regions is minimal, so that separate interest rate structures apply in each type of region.² Suppose bad weather conditions generate expectations of income decline in Peripheral regions. Demand for borrowing from money-lenders on the security of current crops will increase, but the willingness of money-lenders to provide funds will fall. Interest rates rise to reflect the lower valuation of the collateral.³ But this rise will be unlikely to deter borrowers, whose subsistence depends on it; also since the supply of credit is conditional on current repayments, it will not be elastic with respect to future interest payments. Without government assistance, the outcome is of real income decline on account of higher interest payments, even if expectations prove unfounded and the collateral undervalued. In the converse situation of expectations of a better-than-average harvest, collateral will be valued high, reducing interest rates, raising real income.

The situation for the export enclave of a low-income developing country is synonymous with that of developing countries in an international context, so it will not be given separate consideration.

(ii) Developed Country Regions

The regions of developed countries have much more closely integrated financial markets than low, and even middle-income developing countries. There is in general a national interest rate structure with regional differences within that structure, reflecting differences in real return prospects, and risk of default. Regional rate differences will be more systematic the stronger the inter-regional

linkages, causing uniform trends in expected rates of return and default risk. Differences reflecting different regional degrees of excess demand will be more apparent within a unit banking system but may also occur within branch banking systems. The scope for regional differences in rates on regional assets such as bank deposits is limited if the banking system is nationwide, or often by statute if it is not.

Traditional regional analysis assumes that there is no bank rationing on a regional basis; excess demand for credit cannot arise within one region of a national banking system when another region has excess supply, because of availability rather than relative rates of return. But even if bank branches in Peripheral regions where pessimistic expectations had emerged increased their lending automatically as demand for credit increased (which is unlikely since perceived creditworthiness would have fallen with expectations of income growth), at the same time supply of liquidity from other sources would be falling. In particular, regional asset holders would be selling assets and causing a capital outflow. Even if eventually, 'in equilibrium', the banks met all creditworthy excess demand for credit, the rest being discouraged by the risk premium on lending rates, excess demand would have been outstanding for a considerable period of time, further worsening expectations.

For regions within a developed country, the role of the public sector will be very important, in effect underwriting much of creditors' activities in those Peripheral regions designated by regional policy. The extent of downward income adjustment required as a result of deteriorating expectations would correspondingly be reduced.

Much depends on the state of expectations in other regions. Suppose the Central regions are on the verge of an upswing. Then

the expected differential between rates of return in the two types of region will encourage capital flows out of the Peripheral regions and into the Central regions (on the part of all asset-holders, including the banks) more than if expectations for the Central regions also were pessimistic.

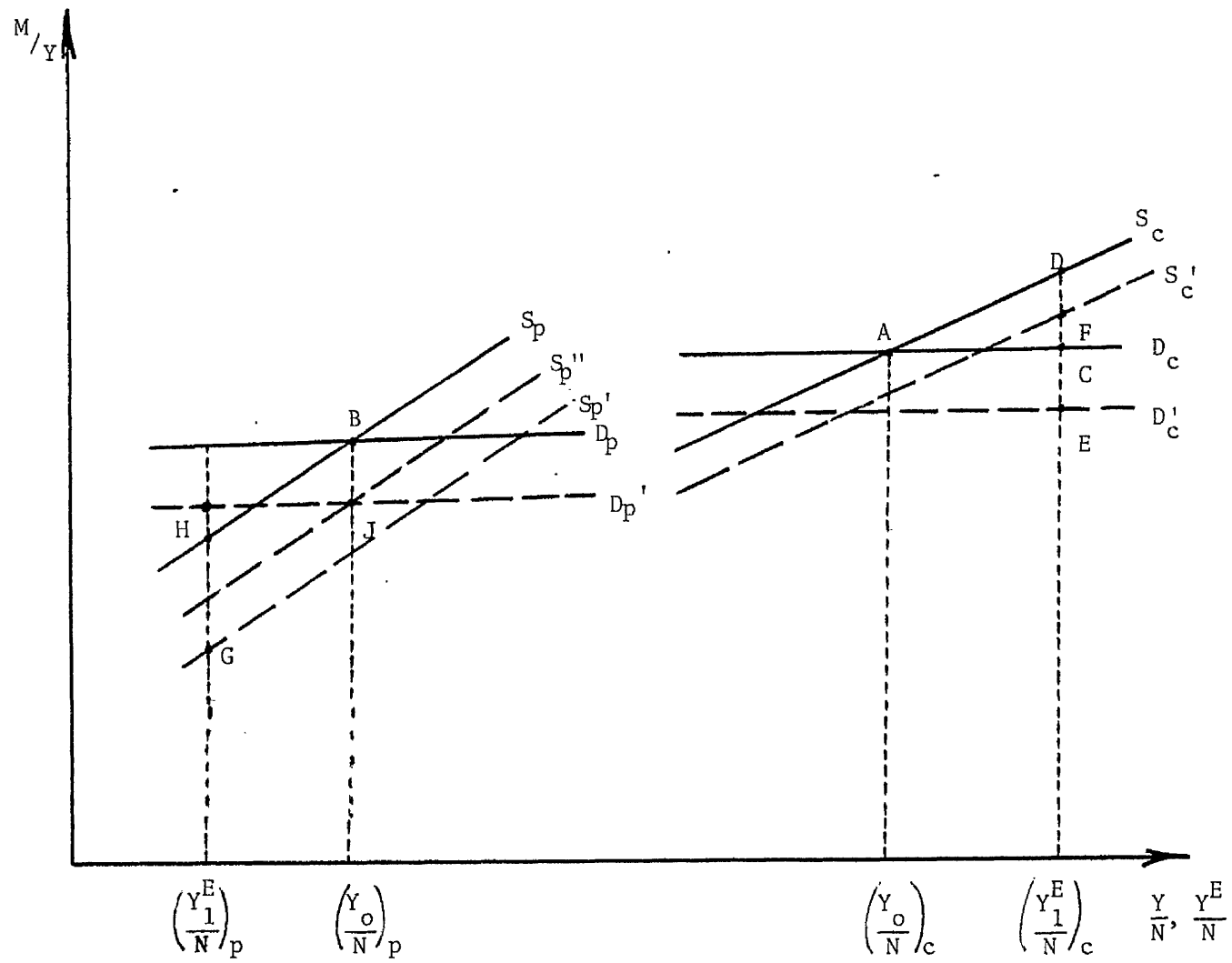
Indeed, a two-region model raises interesting questions about the distributional impact of monetary policy, as well as its effectiveness. Suppose the income of the Central region is expected to increase from its current level of $(Y_0/N)_C$ to $(Y_1^E/N)_C$ in Figure 7.4 while expectations regarding Periphery's income are static.

Overall, there is an excess supply of money CD, all on the part of Centre (Periphery's excess supply is zero, at point B). Supposing this excess supply is viewed as potentially inflationary, so a restrictive monetary policy is imposed, raising the national interest rate structure and lowering the supply of money. The interest rate rise would shift down the two money demand functions to D'_P and D'_C . The national monetary base has been reduced, but how far each region's money supply has been reduced depends on the regional allocation of liquidity.

Suppose expectations for Centre are still buoyant, and expectations of potential capital gains from Centre assets have been intensified by what may be regarded as a temporary dip in asset prices during the period of monetary restraint. Suppose also that marginal expenditure in Periphery is interest sensitive, so that income there now is expected to fall to $(Y_1^E/N)_P$. On both counts, the relative expected returns of lending have moved in Centre's favour, encouraging (according to the analysis in Chapter 6

Figure 7.4

Money Demand and Supply under a Restrictive
Monetary Policy: Two-Region Configuration



of bank lending allocation behaviour) a higher proportion of bank lending in Centre. S_p thus shifts down by more than S_c , to S'_p and S'_c respectively with the fall in the money supply.

Centre still has an excess supply of money EF of a magnitude similar to before, CD. But Periphery now has an excess demand GH where there was none before. The monetary policy is deflationary only to the extent that it is deflating Periphery, although Centre activity was the initial cause for concern. The fewer the impediments to interregional capital flows, the more likely is this outcome.

The alternative policy, which would have achieved the aim of deflating Centre while not destabilising Periphery, would be to supplement a tight national monetary policy with a large injection of public funds into Periphery, as a redistribution from Centre. The fall of S_p should thus be limited to S''_p , to equal reduced demand at J, while S_c would be forced down below S'_c . This policy would be all the more effective if the injection of public funds were to finance new expenditure, thus discouraging any tendency for expectations regarding Periphery's income to deteriorate as interest rates rose.

(iii) International Context

The scope for independent interest rate developments, both on financial assets procured by residents as well as their liabilities, is greater in the international context than the regional context. The international money market is however as centralised as many domestic money markets, with a large proportion of transactions being conducted in centres such as London and New York; together with subsidiary markets centred on, for example, Frankfurt and Hong Kong,

these centres make up a market with a tight framework maintained by rapid telecommunications.

Developing and developed countries all hold their international reserves in short-term assets issued by these financial centres in the currencies of the host country, or in other currencies via the Euro-currency market, Asian-currency market, etc. Suppose a Peripheral developing country develops pessimistic expectations, say, because of rumours of development of a synthetic substitute for one of its staple products. As with a region, liquidity preference will rise as a balance of payments deficit is expected to arise, requiring financing. But this preference is thwarted by a reduction in supply of private sector credit, as well as an outflow of domestic capital, also in response to pessimistic expectations; this earlier move into balance of payments deficit starts to deplete existing reserves.

The resulting excess demand for reserves raises further expectations of downward income adjustment. While the cost of credit for the country on the international market may rise, it is unlikely that a significantly increased supply would thereby be induced since the expectation of risk would also have risen. Demand for reserves might fall somewhat as their cost rose, but it is unlikely that high interest rates as such would help to cure any underlying trade imbalance. Indeed, increasing interest rates increases the cost of borrowed reserves and may actually increase the demand for reserves to finance future interest payments. In any case, if availability is the more effective constraint on demand than interest charges, excess demand will not be eliminated and downward income adjustment will be required.

Public sector credit in times of payments difficulties shifts the supply curve up and also impedes the development of expectations of continuous downward income adjustment. But it confirms expectations of some downward adjustment since this is often a condition attached to the granting of such credit.

For a developed country, the interest rate mechanism is more powerful. There is a large volume and high degree of interest-sensitivity of short-term capital flows among the major developed countries, the international Central economies. Anticipating need for increased reserves in the future, a Central government can implement a moderately tight money policy, raising interest rates and attracting capital inflows. Demand will be less the greater the necessary interest rate change, since monetary tightness itself helps to correct any underlying trade imbalance by reducing imports. Thus, a developed country will be able to eliminate excess demand for money more easily than a developing country by interest rate adjustment, and the attendant income adjustment.

Freely-flowing capital has its costs in that, if the market anticipates devaluation, no reasonable interest rate change will succeed in attracting capital flows. This was a particular danger under the initial Bretton Woods adjustable peg system, where a run on a currency expected to be devalued can be represented (using this chapter's diagrammatic formulation), by a continuous move of speculators along the supply curve to the left and the Central monetary authority concerned along the demand curve to the left, until the devaluation occurred, with income deflation.

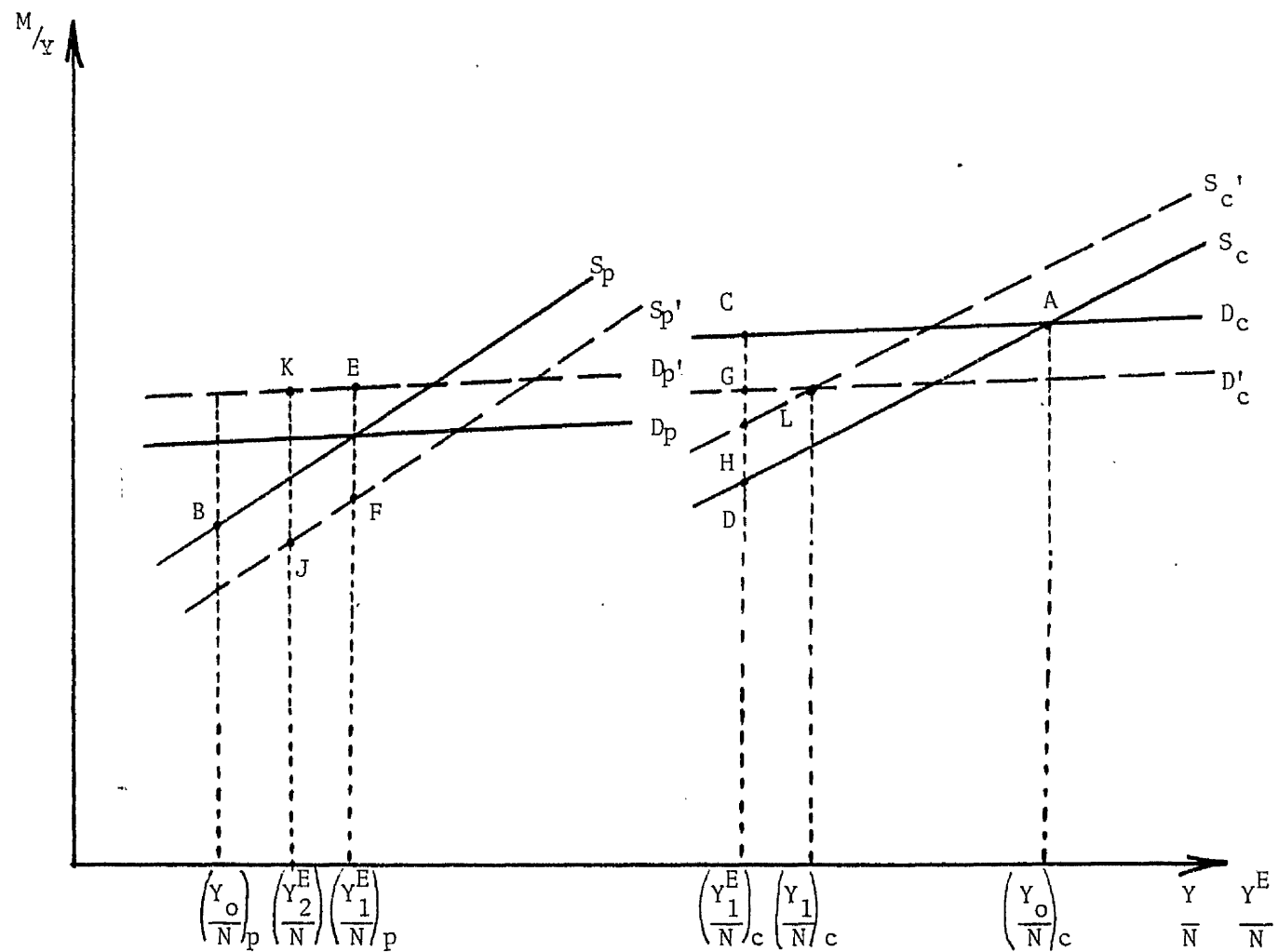
The public sector also plays an important role for developed countries. Central economy international institutions like the

Bank for International Settlements (B.I.S) serve to counteract market trends for developed countries (as do institutions like the I.M.F. for developing countries). Any destabilising speculation like that described above can be brought to a swift halt by a currency swap arrangement which shifts the supply curve up to eliminate excess demand for reserves. The sooner this occurs, the less the necessary downward adjustment in income required. The knowledge that such arrangements can be implemented rapidly is sufficient to deter one-way speculation to a considerable extent. Further the more continuous use of the exchange rate instrument in recent years has to some extent dampened demand for reserves, so that an expectation of depreciation may send reserves supply down the supply curve, but demand may not significantly be affected, easing the excess demand position.

In order to consider the interdependencies between the two types of economy in the context of balance of payments adjustment, the closed two-country configuration will now be employed. Suppose, as depicted in Figure 7.5, Periphery starts off in payments balance at B with income at $(Y_0/N)_P$ while Centre is in payments balance but expecting to move into deficit because of an expected fall in exports. (For simplicity, it is assumed that both have fixed exchange rates with respect to the other's currency.) Suppose Periphery was in a state of excess demand for reserves at B, but expects to eliminate that excess demand and increase income to $(Y_1^E/N)_P$ as a result of Centre's expected deficit. Centre starts in reserves demand and supply balance at A, at income $(Y_0/N)_C$, but expects income to fall, with the deficit, to $(Y_1^E/N)_C$, causing reserves demand to move along D_C to C and supply to move down S_C to D.

Figure 7.5

Money Demand and Supply with Expectations of a Centre
Deficit: Two-Country Configuration



Suppose Centre implements a tight monetary policy to eliminate the excess demand for reserves. Since Centre dominates the international money market (by virtue of the higher absolute level of money market instruments issued by Centre), interest rates in that market are also increased. D_C shifts down to D'_C , because of the corrective power of monetary policy on the trade balance. But D_P shifts up to D'_P because Periphery's debt-service burden increases with global interest rates, and, to the extent that Centre's imports are reduced, so are Periphery's exports. The interest rate rise attracts reserves to Centre, raising S_C to S'_C . But since the stock of reserves has not changed, this shift must be mirrored by a downward shift in Periphery's supply curve S_P , to S'_P . (Although all interest rates follow the Centre rate, its rise is sufficient to attract inflows.)

As a result expectations will change as to the future balance of payments between the two (sets of) countries. At the original sets of expectations, Centre's excess demand has been reduced to GH, but Periphery now has an excess demand EF where previously it was expected that there would be none. Periphery is now in payments deficit with Centre because of adverse capital movements. $(Y^E/N)_P$ thus shifts back towards $(Y_O/N)_P$ as a result, while Centre can increase its expected income level to the extent that the interest rate change reduces future needs for income adjustment to payments imbalance. At position L, Centre would be in reserves equilibrium, with a smaller downward income adjustment than was earlier thought necessary, from $(Y_O/N)_C$ to $(Y_1/N)_C$. But Periphery is at position J, with an excess demand for reserves of KJ. Expected income is now less than before, and may fall further depending on how the excess demand is resolved.

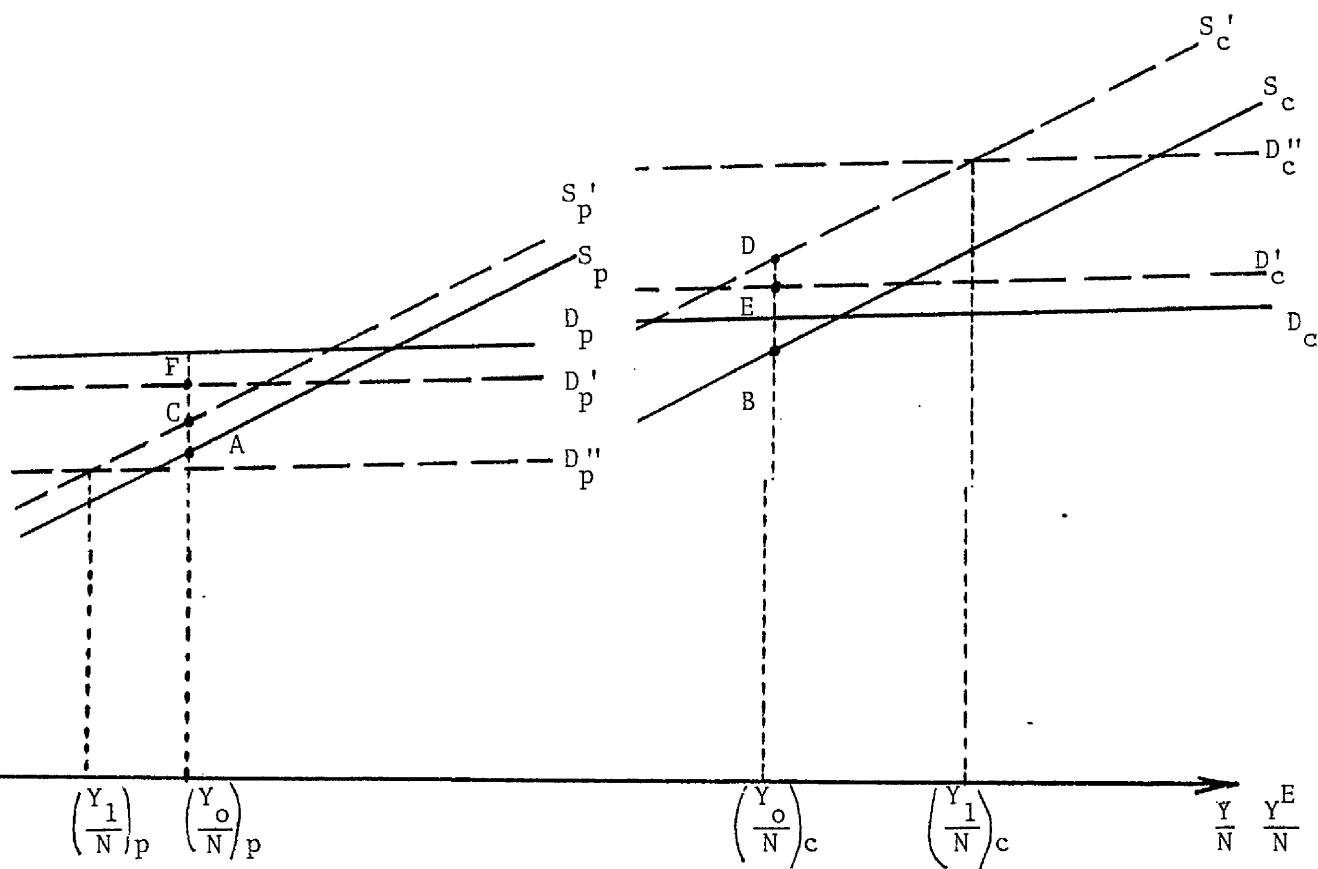
Finally, suppose that it is decided to increase world reserves because of a perceived shortage, by increasing SDR holdings, say by a uniform percentage. Again using the closed, two-country system, Centre must be in an initial position of excess demand for reserves and unwilling to raise interest rates to eliminate the gap. (Holding the majority voting-power in the IMF, the Group of Ten, Central, countries are most influential in deciding on a quota increase or new SDR allocation.) Since Periphery is more frequently in an excess demand position, according to the earlier analysis it is reasonable to consider that Periphery's initial position consists of an excess demand of a higher proportion of actual holdings than Centre's excess demand.

Since holdings are supply constrained, Periphery and Centre start at positions on their supply curves such as A and B, respectively, in Figure 7.6. The increase in reserves shifts up their supply curves by an equal percentage, AC and BD respectively. This supplementation may allow a relaxation of interest rates in the international money market, raising Centre's demand function somewhat to D'_C , but reducing that of Periphery to D'_P because of its effect on financing costs.

It is unlikely that the size of the allocation would be such as not to fill current excess demand, at least for the Central economy. After netting out the increase in Centre demand, there will thus be an excess supply, as represented by DE. For Periphery, however, starting off with a much greater proportionate excess demand, some excess demand remains, as represented by FC. Lowered interest rates will

Figure 7.6

Money Demand and Supply with an Increase in Supply:
Two-Country Configuration



add to the effect of excess supply of reserves in Centre to generate income growth, so that the economy will move out to the right until the excess supply is used up at some income level such as $(Y_1/N)_c$ and new short-run demand curve D''_c .

Unless Periphery can eliminate its excess demand, the economy will be pulled to the left until some new lower income level is established at , say, $(Y_1/N)_p$ where the excess demand is eliminated and a new short-run demand curve D''_p established. Thus, the reserves increase has reduced the downward income adjustment that would have been necessary for Periphery on the basis of the initial excess demand position. At the same time, it has brought Centre into an excess supply position without the need for further interest rate increases (which would also have been harmful to Periphery). From there, Centre is all set for expansion.

A Multiplier Approach to Income Adjustment

The references to income adjustment have been more general than precise since it has not yet been established exactly how the real and financial sectors interact. The purpose now is to extend the money multiplier model developed in Chapter 6 to include the real sector more directly than simply its effect on liquidity preference. The precise formulation of the model is set out in Appendix 2. The 'real' side of the model constitutes a supermultiplier, taking account of increased investment induced by income increases.⁵

The feedback between the income and money multipliers operates through the financial flows arising from export and import demand and the financing of investment. Import and investment demand are

thus now expressed directly as a function of income, in the previous period, rather than deposits which were earlier used as a proxy for income. The tables setting out the multiplier process show the financial stocks in each period, and a half-space below, the income and financial flows arising from those stocks, determining the stock levels in the next period. If the bank in either economy has an excess stock of reserves, then this is allocated to lending insofar as there is an outstanding investment demand to be financed. The income supermultiplier process then interacts with the money multiplier process to determine the level and distribution of income and bank deposits in each period. Investment demand is generated by an accelerator process such that an increase in income of X units between two rounds generates an additional investment demand of X units in the following period. For simplicity, it is assumed that savings consist solely of bank deposits, with only the banks holding marketable securities. The model could be made more complete, by taking account also of non-bank liquidity preference, expressed by the (changing) proportion of assets held in deposits and the proportion held in securities.

The initial situation in Tables 7.1 to 7.3 is the same, with no unfinanced investment demand and no net financial flows between the banks. The Periphery bank holds deposits with the Centre bank as its reserves. The Centre bank starts with a 2:1 allocation between Centre and Periphery loans and the Periphery bank with a 1:1 allocation between Periphery loans and Centre securities. The currency drain has been eliminated for purposes of simplification, but the higher reserve requirement in Periphery than Centre (20% of deposits, compared with 10% in Centre) reflects the higher liquidity preference of its customers.

Lending is now constrained by demand: L_C^C and $(L_P^C + L_P^P)$ cannot exceed ΔI_C and ΔI_P , respectively, where ΔI_C and ΔI_P represent unfinanced investment demand (which may include demand left unfinanced from previous periods). It is assumed, however, that the Periphery bank can buy Centre securities without limit; they can be drawn on by Centre business in later periods of insufficient bank lending if there is no investment demand to be financed in the period in which the securities are purchased.

In Table 7.1 the situation is considered where there is a 10 unit increase in government spending in Centre, financed by money creation. Government spending then returns to its initial level; it is unchanged throughout in Periphery. The Periphery bank's lending rule remains that Periphery loans are matched one for one by Centre securities. Now, if outstanding investment demand is less than half of Periphery's excess reserves, L_P^P is only increased by the new investment demand, and securities purchases by an equal amount. Having a lesser degree of liquidity preference, the Centre bank meets all investment demand in Centre first which has not been financed in previous periods by L_C^C or S_C^P , up to the total of its excess reserves in that period. Only then will any outstanding demand in Periphery be met by L_P^C , and then only up to one-third of excess reserves.

During the seven periods (six rounds) set out in Table 7.1, some investment demand remains unfinanced in Centre in rounds 3, 5, 6 and 7 and in Periphery in rounds 5, 6 and 7. In Centre's case, the constraint is equivalent to the savings constraint, since the Centre bank devotes all its resources first to meeting Centre demand. In Periphery's case, the resources were available, but

Table 7.1 Money-Financed Addition to Government Spending in Centre

$C_c + I_c + G_c + X_c - M_c = Y_c$	$(E_c) R_c$	L_c^C	L_c^C	$D_c^C + D_c^C$	A_c	$C_c + I_c + G_c + X_c - M_c = Y_c$	$(E_c) R_c$	L_c^P	S_c^P	D_c	A_c							
	0	20	120	60	180	20	90	315	90	45	90	450	0	20	40	40	100	
630 180 90 90 90 900	9	30	120	60	190	20	90	315	90	45	90	450	0	20	40	40	100	90
630 180 100 90 90 910	8	30	129	60	199	20	90	315	90	45	90	450	0	20	40	40	100	90
637 189 90 90 91 915	7.5	30	135	61	205	21	91	315	90	45	91	451	1	21	40	40	101	90
640.5 195 90 90 91.5 924	6.5	30	142.5	61	210	23.5	92.5	315.5	91	45	91.5	453	2.5	23.5	40.5	40.5	104	90
647 203 90 90.5 92.5 938	6	30	149	61	215	25	92.5	317	91.5	45	92.5	455.5	3.5	25	41.5	41.5	106.5	91
656.5 210.5 90 91 94 954.5	5.5	30	155	61	219	27	94	319	92.5	45	94	459.5	5	27	43	43	110	92
668 218 90 92 95.5 972.5	.	.	.	.	.	.	95.5	321.5	94	45	95.5	92	464	.	.	.	.	93.5
.
.

Table 7.2 Money-Financed Addition to Government Spending in Periphery

$C_c + I_c + G_c + X_c - M_c = Y_c$	$(E_c) \begin{matrix} R_c & L_c^C & L_c^C & D_c^C & D_c^C + D_c^C \\ & & & & & \end{matrix}$										$(E_c) \begin{matrix} R_c & L_c^P & S_c^P & D_c^P \\ & & & & & \end{matrix}$									
	0	20	120	60	180	20	$\frac{A_c}{C_c}$	$\frac{C_c + I_c + G_c + X_c - M_c}{D_c}$	$= Y_c$	0	20	40	40	40	100	$\frac{A_c}{D_c}$				
630 180 90 90 90 900	9	30	120	60	180	30	90	315	90	45	90	90	450	8	30	40	40	110	90	
630 180 90 90 90 900	8.5	30	120	63	183	30	90	315	90	55	90	90	460	7	30	44	44	114	90	
630 180 90 92 90 902	8.5	30	122	64.5	192.5	24	90	322	97	45	90	92	462	1	24	47.5	47.5	111.5	96	
631.5 182 90 92.5 90 906	7.5	30	126	67.5	203	20.5	92.5	323.5	102	45	90	92.5	468	-1	20.5	48	48	108.5	96	
634 186 90 93.5 90.5 913	7	30	133	68	211.5	19.5	93	327.5	105.5	45	90.5	93.5	475	-2	19.5	47.5	47.5	107	94	
639 193 90 95 91.5 925.5	6	30	140	68	221.5	16.5	91.5	332.5	105.5	45	91.5	95	479	-4	16.5	46.5	46.5	103	94.5	
648 205 90 95.5 92.5 946	.	.	.	.	.	.	92.5	335.5	104.5	45	92.5	96	481.5	.	.	.	.	.	94.5
.	
.	
.	

not used to meet demand because the bank's liquidity preference prevented it from tying up all its free assets in Periphery loans. Thus money, rather than savings, was the effective constraint. By the end of seven rounds, Centre deposits had increased by 23% compared with 10% in Periphery and income by 8%, compared with 3% in Periphery.

In Table 7.2, the situation is considered whereby the money-financed increase in government spending occurs in Periphery rather than Centre. The banks' asset allocation rules remain unchanged from Table 7.1. The Periphery bank does not satisfy the growth in investment demand, preferring to use half its free assets to purchase Centre securities. Some of the outstanding demand is met by Centre bank until Centre's own investment expansion is started by the increase in exports to Periphery. The combination of increasing imports and capital outflows causes Periphery to go into balance of payments deficit by the fifth round, requiring a contraction of credit and securities holdings.

By the end of seven rounds, Periphery deposits have increased by 3% compared with 19% in Centre, and income by 7%, compared with 5% in Centre. Total deposits have grown by 18% compared with 19% in Table 7.1, and total income by 5.6% compared with 6.4% in Table 7.1. Centre's investment plans are not met because of financial constraints only in round 7, but Periphery's plans are constrained in rounds 3, 5, 6 and 7.

Suppose, however, that the increase in government spending in Periphery buoyed up expectations regarding the viability of the Peripheral economy to such an extent that the Periphery bank

reduced its liquidity preference. Table 7.3 sets out the multiplier process on the assumption now that the Periphery bank attempts to satisfy all Periphery investment demand first, and only then purchases Centre securities, up to an amount equal to L_p^P . As a result, investment and thus income grow more quickly in Periphery than the Table 7.2 situation. But balance of payments problems do not emerge until later because capital outflows to Centre are markedly reduced.

Expectations of higher Periphery income are fulfilled: Periphery income has now grown by 10% in seven rounds, compared with 7% in Table 7.2. The faster attendant import growth has also allowed a slightly higher rate of income growth in Centre: 5.3% after seven rounds compared with 5.1% in Table 7.2. Deposit growth has also been faster for Periphery (17% compared with 3%) but slower for Centre (18% compared with 19%), and slower in total. Total deposits have grown at 17% compared with 14% in Table 2. More significantly, the total income growth of 7% is the highest of all these scenarios. Centre's investment plans again come up against financial constraints in round 7, but Periphery's plans now are met up until rounds 6 and 7.

Conclusion

It was suggested that money supply is a positive function of level of development and of expected changes in that level, while changes in demand for money relative to income are an inverted 'U' shaped function of level of development and a negative function of expected changes. As a result, while the supply of money is elastic, responding to changes in demand (and the causes of those changes), shifts in supply are frustrating rather than accommodating.

Table 7.3 Money-Financed Addition to Government Spending in Periphery: Increased $I_p^P : S_p^P$ —

$C_c + I_c + G_c + X_c - M_c = Y_c$	$(E_c) R_c$	L_c^C	L_p^C	$D_c^C + D_p^C$	A_c	$C_p + I_p + G_p + X_p - M_p = Y_p$	$(E_p) R_p$	L_p^P	S_p^P	D_p	A_p
630 180 90 90 90 900	0 20 120 60 180 20	9 30 120 60 180 30	9 30 120 60 180 30	90 315 90 45 90 90 450	0 20 40 40 40 100	8 30 40 40 40 110	90				
630 180 90 90 90 900	9 30 120 60 180 30	9 30 120 60 180 30	9 30 120 60 180 30	90 315 90 55 90 90 460	6.5 30 48 40 40 118	90					
630 180 90 92 90 902	8.5 30 122 62 184 30	9 30 120 62 182 30	9 30 120 62 182 30	92 322 100 45 90 92 465	5.5 30 53 41.5 123	92					
631.5 182 90 93 90 906.5	8 30 126.5 64 195.5 25.5	9 30 126.5 64 195.5 25.5	9 30 126.5 64 195.5 25.5	90 325.5 105 45 90 93 472.5	0.5 25.5 58.5 41.5 124	94.5					
634.5 186.5 90 94.5 90.5 915	7 30 134.5 64 205 23	9 30 134.5 64 205 23	9 30 134.5 64 205 23	92 330.5 112.5 45 90.5 94.5 484	-1.5 23 59 41.5 122	94.5					
640.5 195 90 97 91.5 931	6.5 30 141.5 64.5 217.5 17.5	9 30 141.5 64.5 217.5 17.5	9 30 141.5 64.5 217.5 17.5	91.5 339 113 45 91.5 97 491.5	-6 17.5 58 40.5 116.5	97					
651.5 201.5 90 98 93 948	93 344 112.5 45 93 98.5 495.5	93 344 112.5 45 93 98.5 495.5	93 344 112.5 45 93 98.5 495.5	93 344 112.5 45 93 98.5 495.5	97.5						

Thus, although economies at low levels of development have relatively high liquidity needs, these needs are not generally satisfied. Any deterioration in expected income levels for such economies further increases liquidity preference but also further reduces the supply of liquidity. The reverse is the case for high income countries, and for improving income expectations.

These opposing trends in money supply and demand require adjustment, which tends to take the form of downward income adjustment in the case of excess demand for liquidity and upward income adjustment in the case of excess supply. These forces reinforce the underlying income disparities which caused the differences in the demand for and supply of money in the first place.

Counteracting what would otherwise be forces of divergence, the public sector nationally and internationally acts to diminish excess demand for liquidity and to encourage speedy and effective downward income adjustment in order to forestall further damaging developments in expectations. An awareness of the public sector's role in this regard helps in turn to modify (to some extent) differences in liquidity preference in the private sector.

The effectiveness of public sector attempts at redistribution is conditional on the behaviour of financial institutions. If portfolio behaviour is not altered by the redistribution, then income growth will be retarded in the recipient, Peripheral economy and balance of payments problems will emerge, while the opportunity cost in terms of income foregone by the donor, Central economy will be great. If, however, the redistribution is conducted in such a way as to reduce liquidity preference (the financing of infrastructure development, for example, rather than transfer payments) then there

is not only a significant gain for the recipient economy in the form of higher income growth (offset by balance of payments problems which would however be delayed) but also a smaller loss of income growth for the Centre. This is a conventional recommendation in terms of the income multiplier. But the deposit multiplier provides an additional rationale. Since credit availability (as opposed to savings availability) is a potential constraint on the supermultiplier it has to be ensured that the supply of money grows in line with investment demand if the supermultiplier is to have its full effect.

A major impediment to the generation of optimistic expectations, however, is the propensity for Peripheral economies, when expanding, to go into trade deficit (even if the capital account can be improved). This problem is compounded by the extent to which economies in deficit must adjust sooner than economies in surplus, and to the extent that Peripheral economies in deficit have to resort to income adjustment more than Central economies in deficit. Both these factors reflect the lesser willingness of financial institutions to provide credit as deficits grow, and the lesser willingness to provide credit to Peripheral economies in deficit than Central economies in deficit.

This behaviour on the part of each financial institution is profit maximising. It nevertheless plays a significant role in the continuation of large income disparities. The question nevertheless arises whether, from a collective standpoint, a different supply response by financial institutions, or indeed a different institutional structure, might also be self-fulfilling, but in a way which encouraged the diminution of disparities. Before this

question is addressed, in the concluding chapter, detailed reference must be made to the empirical evidence for the variety of hypotheses which have been thrown up by the analysis of the last three chapters. The next Part will thus be devoted to assessing the acceptability of these hypotheses from the empirical standpoint.

Footnotes

1. See D R Khatkhate, 'False Issues in the Debate on Interest Rate Policies in Less Developed Countries', Banca Nazionale del Lavoro Quarterly Review, No. 133 (June 1980), pp.205-224 for an analysis of relative rates of return on investment in developed and developing countries. He argues that interest rates in developing countries are a function more of financial capital scarcity than real rates of return on physical capital.
2. See R I McKinnon, Money and Capital in Economic Development (Washington, D.C.: Brookings Institution, 1973).
3. See A Bhaduri, 'On the Formation of Usurious Interest Rates in Backward Agriculture', Cambridge Journal of Economics, Vol. 1 (Dec. 1977) pp. 341-352
4. The greater ease with which developed countries could employ interest rate policy to minimise income adjustment to payments imbalance, compared with developing countries, in the nineteenth century is described by R Triffin, 'The Myth and Realities of the So-Called Gold Standard', in R N Cooper (ed.) International Finance (Harmondsworth: Penguin 1969), pp.38-61. While developing countries, particularly low-income ones, are still at a relative disadvantage in terms of ability to employ interest rate policy to avoid income adjustment, this point is curiously absent from much of the discussions of contemporary balance of payments adjustment in developed and developing countries.
5. The supermultiplier concept was introduced into regional income multiplier analysis by T Wilson, 'The Regional Multiplier - A Critique', Oxford Economic Papers, Vol. 20 (Nov. 1968), pp.374-393.

Chapter 8. THE TEMPORAL EVIDENCE

Introduction

The theory of financial interrelationships between economies has been built on the base of a theory of financial markets in individual economies as they develop over time. This theory, outlined in Chapter 3 and in Chapters 5 and 6 suggests a general pattern in the demand for and supply of money in the long-run and in the short-run. In the long-run, the capacity of the financial system to supply money on the basis of a given monetary base increases as the financial system and the real economy develop. The demand for money however increases at a decreasing rate as development proceeds, because financial innovation allows for more efficient use of money balances, at the same time as increasing the opportunity cost of those balances. In the short-run, cyclical upturns in expected real rates of return increase the supply of finance made available to real investors while the demand for idle balances falls; the reverse occurs during downturns when the demand for idle balances rises, but their supply falls.

The spatial theory developed in Chapters 5-7 applied these relationships to countries simultaneously at different stages of real and financial development, and with different sets of expectations regarding future real returns, respectively. Before considering the evidence with respect to this spatial theory, this chapter considers the evidence for the underlying temporal theory. The evidence will be drawn from the experience, over the long-run and during business cycles, of the United Kingdom and the United States.

The Long-Run Evidence

Data on monetary aggregates and bank portfolios are available for both the U.S. and the U.K. from the late nineteenth century. The definitions and coverage involved have been subject to periodic revisions. This process of revision itself illustrates the process of financial development described in Chapter 5. As economic development proceeds, financing needs are met by financial innovations. These take the form both of increasing the liquidity or 'moneyness' of existing assets, and of introducing new money assets, often as liabilities of new types of institution. Accordingly, the periodic data revisions consist of extending the range of money-assets and extending the coverage of institutions whose liabilities may be regarded as money.

For any one definition of money, however, it has been hypothesised that, once an economy is monetised, demand rises in the long run as per capita income rises, but at a progressively slower rate. Since the slowing rate of growth in demand for that money asset is primarily the result of the emergence of alternative money assets, these alternative assets then follow a similar growth path, until yet other alternatives emerge. Thus, if each asset could be assigned a particular liquidity value which is invariant over time, the structure of assets becomes less liquid over time. (In fact, of course, an essential feature of the process is that assets acquire greater degrees of liquidity over time, so that actual liquidity need not fall with a move along the liquidity spectrum.)

The money supply analysis in Chapter 6 was constructed within

a spatial framework, and thus has no immediate temporal equivalent to be assessed. The process of financial development as described here and in Chapter 5 does however already incorporate supply considerations. It has been suggested that, in the long-run, supply responds to some extent to demand, particularly when the economy is buoyant. The pressure of excess demand for money on interest rates increases the attractiveness of using alternative assets as money and also increases the profitability of supplying new money-like assets. In the short-run, however, if increasing demand for money is the result of pessimistic expectations (rather than to finance high-return investment), then supply will be frustrating, retarding income growth. Supply thus constrains demand in such a way that the economy is impeded from progressing along its long-run demand function to higher income levels. The long-run trend in actual money holdings may then be treated as tracing out the long-run demand for money function.

The long-run money-income ratio should conform roughly to a quadratic function, concave to the origin. If time is taken as a rough proxy for per capita income, then, over time, the income velocity of circulation should initially fall, and then increase progressively (where velocity is measured by income divided by the money stock as measured by some monetary aggregate, or the reciprocal of the money-income ratio).

Tables 8.1 and 8.2 show the income velocity of circulation of money by three measures for the U.S. and the U.K., respectively. The U.S. measures are taken from 1870, although data on demand deposits (as distinct from total deposits) are not available until

Table 8.1

Income Velocity of Circulation of M_0 , M_1 and M_2 ¹

U.S.: 1870-1979 (decade averages)

	$\frac{Y}{M_0}$	$\frac{Y}{M_1}$	$\frac{Y}{M_2}$
	(%)	(%)	(%)
1870-79	9.22		4.30
1880-89	8.54		3.69
1890-99	8.28		2.73
1900-09	8.92		2.30
1910-19	10.74		2.73
1920-29	11.92	3.18	1.95
1930-39	7.05	2.40	1.52
1940-49	5.18	1.92	1.47
1950-59	7.43	2.11	1.55
1960-69	10.96	3.68	2.17
1970-79	12.60	4.77	2.18

1 Income is measured by Net National Product; data for 1870-1919. interpolated from five-year averages; 1979 figure estimated on basis of 1978-79 growth rate in GNP.

M_0 = bank and non-bank currency and bank deposits with the Federal Reserve Banks

M_1 = non-bank currency plus demand deposits with banks (not split out from M_2 before 1920)

M_2 = M_1 plus time deposits with banks.

Sources: M Friedman and A J Schwartz, A Monetary History of the United States, 1867-1960 (Princeton: Princeton University Press, 1963), Tables A-1, A-2 and A-5;

U.S. Dept of Commerce Historical Statistics of the United States: Colonial Times to 1970, Series F6-9, and Statistical Abstract of the United States, Table 722;

Board of Governors of the Federal Reserve System, Banking and Monetary Statistics 1941-1970, Tables 1.1 and 2.1, and Annual Statistical Digest 1971-1975, Tables 1, 13A, and Federal Reserve Bulletin, various issues.

1915. Taking averages from decade to decade suppresses variations resulting from short-run fluctuations. The long-run trend is one of falling velocity, followed by rising velocity. (There was a major shift in the velocity of M_0 in the 1930s, due to a rapid rise in bank holdings of deposits with the Federal Reserve Banks, at a time when income growth was weak.) Further, the turning-point is reached earlier for the narrower money measure: around the turn of the century for M_0 (aside from the shift in banking behaviour in the 1930s), in 1946 for M_1 and M_2 . The dip in velocity in the 1940s was no doubt accentuated by the slowdown in the consumer goods sector during World War II (due to supply constraints).

Table 8.2 shows velocity measures for the U.K. for ten-year periods from 1880 to 1979. The ratio of income to the monetary base was fairly stable, around a value of 7, from the 1920s to the 1950s. There was, within this period, a sharp drop during the World War II period as in the U.S. But in the 1960s and 1970s velocity rose sharply, reaching 13.63 in 1979. The overall U-shape is more evident in full with the M_3 velocity series which runs from 1880. Again the trough occurs in the 1940s, but with a longer period of downturn evident. Velocity increased markedly in the 1960s. The upswing was halted temporarily in the early 1970s by an unusually rapid increase in M_3 . By 1979 the M_3 velocity was up to 2.24. Further deviations from the general pattern can be attributed largely to the periodic extensions of data coverage as new assets became 'moneylike'. Thus, velocity was lower after 1891, 1967, 1972 and 1975 than if M_3 had represented the same assets throughout.

Table 8.2

Income Velocity of Circulation of M_0 and M_3 ¹

U.K.: 1880-1979 (ten-year averages)

	$\frac{Y/M_0}{\%}$	$\frac{Y/M_3}{\%}$
1880-89		2.04
1890-99		1.79 ⁴
1900-09		1.83
1910-19		1.81
1920-29	6.97	1.53
1930-39	7.17 ²	1.43
1940-49	5.99	1.29
1950-59	7.06	1.63
1960-69	8.80 ³	2.15 ⁴
1970-79	12.28	2.10 ^{4,5}

1 Income is measured by Net National Product

M_0 = bank and non-bank currency holdings plus banks' deposits with the Bank of England

M_3 = U.K. residents' deposits with banks plus non-bank currency holdings

2 Till money from 1930 excludes that of 5 Irish banks

3 Change in 1961 from reporting dates to annual averages

4 Coverage extended to include new contributors to series in 1891, 1967, 1972 and 1975.

5 New method of calculation from 1975.

Sources:

Bank of England, 'The Monetary Base - A Statistical Note',
Bank of England Quarterly Bulletin, March 1981, pp.59-65;

D K Sheppard, 'The Growth and Role of U.K. Financial

Institutions 1880-1962 (London: Methuen & Co., 1971), Table (A)3.3,
pp.182-183;

Bank of England Statistical Abstract No. 1 (1970) and No. 2 (1975);

Bank of England Quarterly Bulletin (various issues)

Statistical Annex, Table 11;

C H Feinstein, 'National Income, Expenditure and Output
of the United Kingdom, 1855-1965' (Cambridge: Cambridge
University Press, 1972), Table 1, pp.74-77;

C.S.O., 'National Income and Expenditure (various issues)

. The concept of income velocity derives its significance from its two component parts, transactions velocity¹ and the ratio of income to transactions. It was suggested in Chapter 5 that the quadratic shape of the M/Y demand ratio (and thus the U-shape of the Y/M ratio, to the extent that it reflects demand) resulted from the combination of a transactions velocity rising progressively with per capita income and a ratio of income to transactions which fell as production became more specialised and the trade increased. The major factor modifying the latter relationship is that financial transactions, in financial centres, may be expected to increase relative to income over time. Financial circulation also has a higher velocity than industrial circulation.² In presenting the U.S. data, then, information will be provided showing trends in transactions velocity for centres other than New York and the other leading financial centres.

Tables 8.3 and 8.4 show transactions velocity measures for the U.S. and the U.K., respectively, over the period 1945-75. The base for the turnover measure is demand deposits; this is not an exact measure, since savings deposits are also subject to debits on the one hand, while some portion of demand deposits may not be held for transactions purposes, on the other. Such considerations have greater significance in the short-run analysis of velocity statistics, and will be discussed further in the next section. For the purposes of establishing long-run trends, however, the use of demand deposits is the best available option, and is indeed the normal convention.

Both tables demonstrate a strong upward trend in transactions

Table 8.3

Rate of Turnover of Bank Deposits¹

U.S.:1945-75 (Selected Years)

	<u>All Reporting Centres</u>	<u>New York</u>	<u>Other Leading Centres</u>	<u>Other Centres</u>
1945	17.6	24.1	17.5	13.5
1950	21.9	31.1	22.6	17.2
1955	27.1	42.7	27.3	20.4
1960	35.5	60.0	34.8	25.7
1965	48.1	98.8	44.7	31.2
1970	72.9	154.4	77.6	41.9
1975	105.3	356.9	72.9	

1. Defined as the ratio of annual debits to total demand deposits
2. Boston, Philadelphia, Chicago, Detroit, San Francisco-Oakland and Los Angeles-Long Beach.

Sources: U.S. Dept. of Commerce, Historical Statistics of the United States: Colonial Times to 1970, Series X 698-705 and Statistical Abstract of the United States, Table 884.

Table 8.4

Rate of Turnover of Bank Deposits¹

U.K.: 1945-75 (Selected Years)

	<u>Current Account Deposits</u> (£ mns.)	<u>Total Debit Clearings</u> (£ mns.)	<u>Rate of Turnover</u> (%)
1945	3,127	66,944	21.41
1950	3,979	96,317	24.21
1955	4,422.4	155,083	35.07
1960	4,637.1	228,175	49.21
1965	5,361.4	411,576	76.77
1970	5,974.9	773,087	129.39
1975	11,037.0	1,795,833	162.71

- 1 Total debit clearings divided by total current account deposits. Deposit totals refer to London Clearing Banks from 1945, plus Scottish Banks from 1955 plus Irish Banks from 1960.

Source: C.S.O. Annual Abstract of Statistics, Section 13,
Bank of England Quarterly Bulletin

velocity over the period in question. Although only every fifth year is shown here, transactions velocity is not subject to the trend reversals from year to year which are evident from the income velocity data (except during World War II, when it is reasonable that normal trends in transactions should have been disrupted). The U.S. data are available by clearing centre, and show a strong upward trend both for the financial centres and also for the other centres.³ Further, anticipating the discussion of regional translations of temporal relationships in Chapter 9, it is interesting to note that velocity rises the more important is the clearing centre. Since New York, and the areas covered by the category 'Other Lending Centres' have higher per capita incomes than the rest of the country, the same relationship between transactions velocity and income applies to cross-section data in the same way as to temporal data.

A study by Lieberman⁴ of the U.S. debits data over the period 1947-1973 estimates that debits increase by a multiple, ϵ^{-5} of Y^2 , where Y is nominal income. This supports the hypothesis of a falling income: transactions ratio as income rises. If the income elasticity of demand for money were estimated to be unitary, as some studies suggest, then such an estimate must mask significant economies of scale in terms of transactions. Lieberman estimates the transactions elasticity of demand for money to be around one-third. Other things (like income) being equal, he concludes that technical change in financial transactions reduces the demand for money at a rate of 1.5-2.5% per annum; this rate has increased since World War II.

In fact, the weight of evidence provided by econometric studies of demand for money in the U.S. and the U.K. supports our hypothesis of a falling elasticity of the money:income relationship, falling below unity as of the 1940s.⁵ A study by Laidler,⁶ for example, estimates the elasticity of this relationship for demand plus savings deposits in the U.S. and the U.K. for the three periods 1900-1916, 1919-1940, and 1946-1965. The U.S. elasticities were 1.39, 1.28, and 0.65, and the U.K. elasticities were 1.24, 0.79, and 0.68, for the three successive periods. Since, as with most such estimations, Laidler takes observed money holdings as representing points on the demand curve, he expresses the relationship in terms of demand for money and its income elasticity.

The process of technological advance in finance was described as allowing a gradual shift of portfolios along the liquidity spectrum as illiquid assets became more liquid, and as the most liquid assets became relatively costly. Thus demand for each successive asset, relative to income, would follow the quadratic path of equation (5.5). This pattern may be discerned from Tables 8.5 and 8.6, which show the trend over 1963-1979 of ratios between different monetary aggregates in the U.S. and the U.K., respectively.

The period under consideration is relatively late in the process of financial development, so that the ratio between currency and M_1 (currency plus demand deposits) is actually rising throughout the period in the U.S. (although there is some falling-

Table 8.5

Ratios of Monetary Aggregates¹

U.S.: 1963-1979 (end-year, s.a.)

	<u>C/M₁ (%)</u>	<u>M₁/M₂ (%)</u>	<u>M₂/M₃ (%)</u>	<u>M₃/M₅ (%)</u>
1963	20.77	60.45	64.68	97.66
1964	20.95	59.08	63.79	97.14
1965	21.19	56.85	63.88	96.66
1966	21.80	55.23	64.21	96.97
1967	21.57	53.53	64.33	96.35
1968	21.46	52.81	64.94	96.17
1969	22.08	53.22	64.60	98.23
1970	22.36	51.85	64.54	96.29
1971	22.50	49.57	63.31	95.72
1972	22.29	48.60	62.17	95.09
1973	22.74	47.34	62.14	93.55
1974	23.95	46.23	62.39	91.62
1975	25.00	44.38	60.78	92.95
1976	25.80	42.24	59.95	95.22
1977	26.25	41.90	58.88	94.89
1978	27.15	41.21	58.40	93.93
1979 ²	27.92	40.16	58.56	94.43

1 C = currency (non-bank)

M₁ = C plus demand deposits with banks

M₂ = M₁ plus non-CD time and savings deposits with banks

M₃ = M₂ plus deposits with non-bank thrift institutions

M₅ = M₃ plus CDs

2 November data used since December 1979 data on new basis

Sources: Board of Governors of the Federal Reserve System,
Banking and Monetary Statistics 1941-1970, Table 1.1, Annual
Statistical Digest 1971-1975, Table 13 and Federal Reserve
Bulletin, various issues.

Table 8.6

Ratios of Monetary Aggregates¹U.K.: 1963-1979 (4th quarter, s.a.)

	C/M_1 (%)	C/M_3 (%)	M_1/M_3 (%)
1963	31.44	19.92	63.36
1964	33.17	20.53	61.89
1965	34.23	20.48	59.83
1966	35.14	20.25	57.63
1967	34.08 ²	19.08 ²	56.00 ²
1968	33.28	18.07	54.30
1969	34.91	18.50	52.98
1970	35.21	18.65	52.98
1971	33.42 ³	17.94 ³	53.67 ³
1972	33.19 ²	15.89 ²	47.88 ²
1973	33.44 ²	13.31 ²	39.66 ²
1974	35.00	13.72	39.03
1975	34.05 ⁴	14.78 ⁴	43.10 ⁴
1976	35.06	15.17	44.86
1977	33.00	15.84	47.50
1978	32.75	15.91	48.12
1979	32.71	15.35	46.92

1. C = notes plus coin (non-bank)

M_1 = C plus sterling current account deposits held with banks
(including the Bank of England, Banking Dept., and the
National Giro) net of 60% of transit items.

M_3 = M_1 plus sterling deposit accounts with banks (as defined
for M_1), sterling deposits with Discount Houses, other
currency accounts and public sector accounts.

2. Data reflect new contributors to series

3. From last quarter, 1971, smaller estimated component of data

4. New method of calculation and new contributors to series from
May 1975.

Sources: Bank of England Statistical Abstract No. 2 (1975) Table 12/1
and Bank of England Quarterly Bulletin, various issues.

off after 1976 in the U.K.). This reflects the falling significance of demand deposits rather than the rising significance of currency.⁷ Broadening the money measure to include time deposits (and other deposits) in the U.K., the centre column in Table 8.6 shows the ratio of currency to M_3 falling (after 1964) until 1973, and only then starting to rise. This coincides with the timing of the turnaround in the (M_3/Y) ratio (or Y/M_3 ratio) as shown in Table 8.2. For the same reason, the (M_1/M_3) ratio for the U.K. starts to rise again after 1974.

The U.S. data for the broader money definitions than currency show a more consistent downward trend throughout the period. (M_1/M_2) , (M_2/M_3) and (M_3/M_5) all decline fairly steadily, barring year-to-year fluctuations.

In order to provide a longer-term perspective on the process, Table 8.7 shows the trend in ratios between currency and demand-plus-time deposits, and between bank reserves and the same deposit total for the U.S. at ten-year intervals over the century 1870-1970. Both ratios, which play a crucial role in determining the bank multiplier, show a steady downward trend, broken by an upward shift in the 1930s. The introduction of the Federal Reserve System in 1913 contributed to the declining reserve ratios, first by providing a lender of last resort facility, and second by imposing lower reserve requirements on time deposits than demand deposits (while there was a gradual shift from demand deposits to time deposits). (The financial disruption in the U.S. following 1929 caused a massive reduction in bank deposits, and a shift of bank portfolios into reserve assets).⁸ Since the bank multiplier is a negative function of the reserve:deposit ratio

Table 8.7Ratios of Bank Reserves and Currency in Circulation to Deposits¹U.S.:1870-1970 (Selected Years: mid-year)

	<u>R/D (%)</u>	<u>C/D (%)</u>	<u>m³</u>
1870	31.85	65.36	1.70
1880	21.10	48.08	2.14
1890	15.82	29.41	2.86
1900	14.71	22.94	3.27
1910	12.76	15.04	4.14
1920	9.10	14.75	4.81
1930	7.78	8.84	6.55
1940	31.35 ²	13.85 ²	2.52
1950	14.47	20.16	3.47
1960	11.36	16.31	4.20
1970	9.49	16.20	4.52

1. Demand plus time deposits held at commercial banks
2. This temporary reversal in the downward trend commenced around 1930.
3. Money multiplier, calculated as $\frac{1 + C/D}{R/D + C/D}$

Sources: M Friedman and A J Schwartz, A Monetary History of the United States 1867-1960 (Princeton: Princeton University Press, 1963), Tables A-1 and A-2, Board of Governors of the Federal Reserve System, Annual Statistical Digest 1971-1975, Tables 3 and 13.

and the currency:deposit ratio, the multiplier rose steadily during the period, with a downward shift in the 1930s. Thus, the capacity to supply credit with a given base of high-powered money rose until the 1930s, fell back to the 1870s level, and then resumed its upward path. The reversal in money supply capacity following the 1930s was an extreme version of the short-run cyclical behaviour to be discussed in the next section; in this case it involved a change in banking structure which had a continuing effect on the money multiplier.

The equivalent information for the U.K. banking system is not set out since it would not be particularly instructive. During most of the period for which banking data are available, bank reserves have contained other assets than cash and balances with the Bank of England, so that the latter are not a decisive constraint on bank expansion.

The hypothesis that demand for money assets shifts along the spectrum from most liquid to less liquid money assets may be extended to other forms of liquid assets (on the grounds that 'moneyness' or liquidity is an attribute possessed in varying degrees by many assets). The hypothesis then suggests that, beyond a certain stage of financial development, portfolios will shift along the liquidity spectrum towards the less liquid end as per capita income increases.

The following tables, Tables 8.8 to 8.12, analyse the trend in portfolios in different sectors in both the U.S. and the U.K. Tables 8.8 and 8.9 show the change in the structure of banks' portfolios in the two countries from the 1940s to the 1970s.

Table 8.8

Composition of Assets of Commercial Banks

U.S.: 1946-1970

	Cash Assets	U.S. Govt. Obligations	Other Securities	Loans
	(As % of total assets)			
1946-50	22.03	46.09	6.12	24.65
1951-55	22.08	33.38	8.03	35.18
1956-60	19.05	26.16	8.43	44.45
1961-65	16.98	20.31	10.63	49.48
1966-70 ¹	17.87	12.99	15.22	60.17
1971-75	14.40	7.76	15.88	57.51

1. Data from June 30, 1969, include consolidated reports and report total loans and securities on a gross basis (i.e. before deduction of valuation reserves).

Source: Board of Governors of the Federal Reserve System,
Banking and Monetary Statistics 1941-70, Table 1.3 and Annual
Statistical Digest 1971-1975, Table 16.

Table 8.9

Composition of London Clearing Bank Assets

U.K.: 1941-1975

	Cash and Balances with Bank of England	Other Liquid Assets (as % of Total Deposits)	Investments	Advances and Other Accounts
1941-45	10.49	41.40	28.94	23.55
1946-50	8.64	44.93	19.19	26.38
1951-55	8.21	31.07 ¹	32.56	34.90 ²
1956-60	8.17	31.80	23.63	41.89
1961-65	7.31	25.29 ³	12.95	49.32 ³
1966-70	8.12	24.05	11.82	48.59
1971-75	4.80	25.33	8.52	60.41

1. From 1951 includes items in transit between branches of same bank.
2. From 1952 excludes items in transit between different banks.
3. From 1961, refinanceable export credits and some other items excluded from Advances and included in Liquid Assets.

Sources: B R Mitchell and H G Jones, Second Abstract of British Historical Statistics (Cambridge: Cambridge University Press, 1971)
Chapter 15, Table 2
Bank of England Statistical Abstract, No. 1 (1970), Table 9(1) and No. 2 (1975=, Table 8/2, and Bank of England Quarterly Bulletin, Table 3.2.

In each case the columns refer to assets ranging from most liquid in the first column to least liquid in the fourth column. Bank loans are not marketable and involve some default risk, and are therefore less liquid than marketable securities; government securities, in turn, are more liquid than other securities, since their markets are much broader and since governments in general ensure relative stability of the capital values of their securities to encourage sales of new issues.

In both the U.S. and the U.K., the proportion of assets held in cash and marketable assets fell throughout the period, with an increasing proportion devoted to bank loans or advances. As with different forms of bank liability, each category of asset supplied more liquidity during the period, as capital markets increased the volume of transactions and efficiency of operations. Thus the shift towards less liquid assets overstates the reduction in the overall liquidity of bank assets.

The same pattern is evident in the non-bank sectors. Tables 8.10 and 8.11 show the trend in the structure of the personal sector's assets in the two countries. Table 8.10 shows the percentage of assets held in assets of varying degrees of liquidity in the U.S. personal sector over the period 1946-1970, in five-year averages. Demand deposits and currency more than halve their share of total assets during the period. Savings accounts with banks maintain a stable share, while savings accounts with non-bank financial intermediaries increased their share markedly. Among market instruments, there has also been a shift towards less liquid instruments, with the share of credit market

Table 8.10

Composition of Financial Assets¹ of Households, Personal Trusts
and Non Profit Organisations

U.S.: 1946-1970

	Demand Deposits and Currency	Savings Accounts with Savings Banks Institutions		Credit Market Instruments	Corporate Equities
	(as % of Total Financial Assets)				
1946-50	14.14	7.89	7.45	24.77	27.08
1951-55	10.92	6.84	8.61	18.85	35.15
1956-60	7.95	6.45	10.01	15.60	40.74
1961-65	6.36	7.27	11.45	12.38	43.41
1966-70	6.31	8.86	11.61	11.41	42.32

1. Remaining share is made up with life insurance reserves,
pension fund reserves, security credit and 'miscellaneous'

Source: U.S. Dept. of Commerce, Historical Statistics of the United
States: Colonial Times to 1970, Series X114-147

Table 8.11

Composition of Assets of the Personal Sector
U.K.: 1957-1977 (Selected years)

	Cash and Bank Deposits	National Savings	Building Society Shares & Deposits	Total Liquid Assets	Government Securities	Other Stocks and Shares	Other Financial ¹ Assets	Physical Assets
1957	8.07	10.21	3.62	22.57	5.93	19.60	17.13	34.60
1962	6.78	7.93	3.65	18.89	3.86	23.90	15.87	37.47
1967	7.20	5.69	4.73	18.09	2.67	19.88	14.67	44.69
1972	6.45	3.90	5.65	16.28	1.55	19.18	13.37	49.62
1977	6.37	3.11	7.25	16.85	2.44	9.89	14.03	56.48

¹ Loans and debtors, plus equity in life assurance and pension funds

Source: Committee to Review the Functioning of Financial Institutions, Report. Cmd. 7937
(London: HMSO, 1980), p.592.

instruments being more than halved over the period, and the share of corporate equities rising by fifteen percentage points.

U.K. data are available for selected years over a shorter period, from 1957 to 1977, as shown in Table 8.11. Cash, bank deposits and deposits with the National Savings system fall throughout the period as a percentage of total assets. Only deposits and shares with building societies, among liquid assets, increase as a share of total assets. Overall the share of assets held liquid falls by around one-third between 1957 and 1977. Government securities also fall as a share of the total. Other stocks and shares are fairly steady until 1977, when the proportion is halved (probably reflecting short-run expectations, rather than a change in long-term trend). Other financial assets fall marginally over the period. The major area of growth is physical assets, whose value has been maintained during a period of rising inflation better than financial assets. (Dwellings accounted for a steady 60+% of total physical assets throughout the period.)

Finally, Table 8.12 shows the trend in the composition of financial assets of the non-financial business sector in the U.S. over the period 1946 to 1970, taking five-year averages. Again, currency and demand deposits are more than halved as a percentage of the total, while time deposits rise as a proportion of the total. Credit market instruments fall as a percentage of total financial assets, while trade credit rises as a proportion of the total. Trade credit is non-marketable and involves a higher risk of default than credit market instruments, although it is generally only short-term.

Table 8.12

Composition of Financial Assets of Nonfinancial Business

U.S.: 1946-1970

	Demand Deposits and Currency	Time Deposits	Credit Market Instruments	Trade Credit
	(as % of total financial assets)			
1946-50	37.19	0.87	19.96	23.72
1951-55	30.68	0.65	20.91	33.31
1956-60	24.94	0.96	18.00	37.67
1961-65	18.46	3.93	16.61	39.84
1966-70	14.39	3.70	14.85	43.78

Source: U.S. Dept. of Commerce, Historical Statistics of the
United States: Colonial Times to 1970, Series X192-206.

The long-run evidence for the U.S. and the U.K. thus lends support for the hypothesis that holdings of any one money asset relative to income increases at low levels of per capita income at a slowing rate, and eventually falls, and that there is a general shift in all sectors along the liquidity spectrum of assets towards the less liquid end as financial development proceeds.

The Short-Run Evidence

The long-run evidence refers to long-run technological developments and changes in economic and financial structures. But within those long-run trends are short-run fluctuations which reflect relationships between the structure of assets and short-run economic conditions. The interpretation of these relationships can vary widely, depending on the particular view adopted of the role of money in the economy.

The view of money's role outlined in Chapter 3 suggests that, in anticipation of real income growth during an upturn, demand for money falls relative to income, and indeed there is a movement along the entire range of assets towards the less liquid end. At the same time, this movement facilitates an increase in the supply of liquidity. The result is relative monetary ease during an upturn, which may be identified by low interest rates. In addition, the income velocity of circulation of money rises during the upturn since money balances are being used for transactions rather than as idle assets.

When the peak in the cycle becomes widely anticipated, profit-taking in financial markets begins to reverse the process.

Transactions balances revert to idle balances, the supply capacity of the banking system falls with the shift to relatively liquid assets, while demand for money increases among financial investors, as well as to finance working capital. The net result is upward pressure on interest rates and a turn-around in velocity of circulation.

Since these developments result from changes in expectations of real income growth, they may have their effect before the actual change in growth rates occurs. Thus, the indications of ease in financial markets could first appear before the upturn actually appears and indications of financial tightness could appear before the cycle's peak. Actually identifying such a process from cyclical data is made difficult by the fact that monetary authorities may deliberately influence financial markets in order to stabilise the cycle. Thus, financial tightness appearing before the peak may be induced by the authorities to dampen the expansion, while financial ease appearing before the trough may be induced in order to curtail the contraction. Further, since expectations in general are not uniform and thus, for many agents, are incorrect, there will be significant fluctuations around the trend suggested here as mistakes are made in predicting the timing of the cycle. With the additional complication of the long-run trends discussed in the last section, on which the short-run fluctuations are superimposed, the identification of cyclical patterns is particularly difficult.

Money markets were viewed in the pre-Keynesian era as playing a strong causal role in business cycles, a view resurrected

primarily by the work of Friedman and Schwartz⁹ in their empirical work on U.S. business cycles over the period 1870-1960. They observed that cyclical changes in the money stock preceded cyclical changes in income, and supplied the suggestion that there was a transmission mechanism by which the money stock changes generated the income changes. They also observed pro-cyclical changes in the income velocity of circulation of money, explained by expressing the demand for money as a stable function of permanent income (rather than actual income).

Friedman and Schwartz were careful not to use this evidence as conclusive proof that money played the primary causal role in cycles. Rather, the evidence was viewed to be consistent in general with such a theory, and their case rested on the plausibility of the transmission mechanism. But increasing liquidity, peaking early in the upswing of output, and increasing velocity during the upswing (and corresponding relationships in the downswing) are equally compatible with the theory employed here.

Seldon¹⁰ provides confirmatory evidence of the procyclical movement of the income velocity of circulation of money. He tentatively suggests that the factors which might explain this movement are procyclical movements in the costs of alternative liquid assets, anti-cyclical movements in transactions relative to income, and cyclical changes in 'tastes' with respect to portfolio preferences. No explanation is proffered as to the cause of the fluctuations. Brunner and Meltzer,¹¹ on the other hand, extend the Friedman and Schwartz explanation of changes in the money supply as the causal factor to include all government

action (including 'pure' fiscal policy), while the private sector is judged to be inherently stable.

Further evidence on the composition of U.S. business cycles over the same period is provided by Cagan,¹² who broke down cyclical changes in the money stock into the multiplier components: high-powered money changes, reserve-deposit ratio changes and currency-deposit changes. The currency-deposit ratio contributed to 46% of the change in money stock over eighteen cycles in the period 1877-1953, with the major relative influence being in the upswing of the money cycle.¹³ Thus the shift into liquidity early in the output upswing was strongly associated with an expansion of deposits relative to currency; the shift out of liquidity before the output trough in turn was associated with a relative shift out of deposits into currency, but to a lesser degree than in the upturn.

Financial variables in fact play a very small part in recent studies of cyclical indicators for the U.S. The only financial variables in Hymans' Composite Leading Indicator¹⁴ for the U.S. are 500 common stock prices and consumer instalment debt. The stock prices led turning-points over the period 1873-1965 by a median four months (five-and-a-half months over 1948-1970). Consumer instalment debt had a median lead of ten months over 1929-1965 (six-and-a-half months over 1948-1970). This only provides information that expectations of changes in the value of stocks and of consumers' income precede actual changes; the debt variable does in addition imply monetary ease during the upturn, and stringency during the downturn.

O'Dea's study of cyclical indicators for the U.K.¹⁵ commences with a discussion of U.S. data and suggests further financial indicators for U.S. cycles. In addition to consumer credit, O'Dea identifies commercial and industrial loans outstanding as leading indicators, confirming the association of financial ease with upturns and stringency with downturns. Further bank interest rates on business loans lagged turning-points, suggesting that financial tightness follows the peak and ease follows the trough. But banks tend to be slow in adjusting their deposit and loan rates when market rates adjust, so it is possible that the lag may overstate general financial market conditions.

Nevertheless, this lag in business loan rates is particularly interesting when considering alternative theories of the role of money in the business cycle. The conventional role of money, as exemplified by Friedman and Schwartz's theory of business cycles, is that expansion of real activity during the upswing puts pressure on financial markets, pushing up interest rates relative to the marginal efficiency of investment. Excess demand for money thus causes the cycle to peak by discouraging investment. Similarly, excess supply of money is judged to contribute to the resumption of expansion (although the floor to disinvestment is often given the primary role in other models giving money the constraining power at the peak).

This explanation is in contrast to the one employed here, that financial stringency is the result of expectations of peaking and ease is to a considerable extent the result of expectations of a resumption of expansion. The consequences of this stringency and

ease may of course help the expectations to be self-fulfilling. But if in fact business loan rates lag behind the cycle, then the likelihood of them being the prime cause of the turning-point is diminished. Further, the concept of cycles in the supply of liquidity has been used sufficiently broadly to imply cycles in the M.E.I. itself as investors incorporate the expected values of assets in their calculations. The process of falling liquidity provision as the cycle peaks, raising interest rates, at the same time has reduced M.E.I. Financial assets thus become more attractive than real assets, both through interest rates rising and M.E.I. falling.

O'Dea¹⁶ found that, for the U.K., market rates also lag the turning-points of the cycle. Both the 91-day Treasury Bill rate at weekly tender and the three-month local authority deposit rate lag the cycle by between two and four months. Long rates, such as the 2½% Consols gross flat yield and the Financial Times actuaries index reach a peak around one-and-a-half years after the peak in output, and trough only a few months after troughs in output. Data on U.K. monetary aggregates are not available for a sufficiently long time-span to establish a definitive conclusion as to their success as cyclical indicators. With that qualification, O'Dea found that Domestic Credit Expansion (D.C.E.) and M_3 lead the cycle weakly.

Cyclical indicators for the U.K. are monitored on a continuing basis, published in Economic Trends.¹⁷ The inverse of interest rates is used as a leading indicator of turning-points. The inverse of the three-month rate on prime bank bills (averaged over three months) leads turning points by a median eighteen months

over the period January 1960 to December 1974, i.e. the bill rate is at its trough a median year-and-a-half before output peaks, and is at its peak a median year-and-a-half before output troughs.

The Financial Times ordinary share price index (three-month average) led output turning-points by a median six months between January 1957 and December 1974. (While the coverage of this index is narrow when compared with the F.T. actuaries index, the two series are very closely matched in terms of the timing of turning-points, which is the concern here.) Share prices are not a complete measure of output expectations (or M.E.I.), since they reflect current earnings. These earnings are relatively low before an expansion and high following an expansion. Thus if share prices peak six months before the output peak (and before earnings thus reach their peak), the peak of the price-earnings ratio will be earlier than six months before the output peak. The timing of expectations changes relative to interest rate changes is potentially important in establishing an indication of the relative causal roles of output expectations and monetary conditions. The hypothesis that output expectations peak well before the actual output peak is confirmed by the evidence provided by the Confederation of British Industry Survey, whose index of business optimism peaks a median year before the output peak over 1959-1977; this indicator was included in the Economic Trends cyclical indicators in 1980.

Bearing in mind the important qualification that monetary authorities manipulate interest rates where possible in order to induce preferred market conditions, we are still left with a strong implication that the height of monetary ease, as measured by interest

rate movements, precedes the peak in output expectations during the upswing and that monetary tightness precedes business pessimism in the downswing, according to the U.K. evidence. But, nevertheless, no inference of causality may be made, since monetary ease and tightness are the result of a combination of both demand and supply factors. Shifting from a dynamic to a static framework for ease of exposition, Figure 8.1 provides a stylised representation of a situation of changing business expectations causing changing financial conditions which reach their turning-point first, before the turning-point of business expectations.

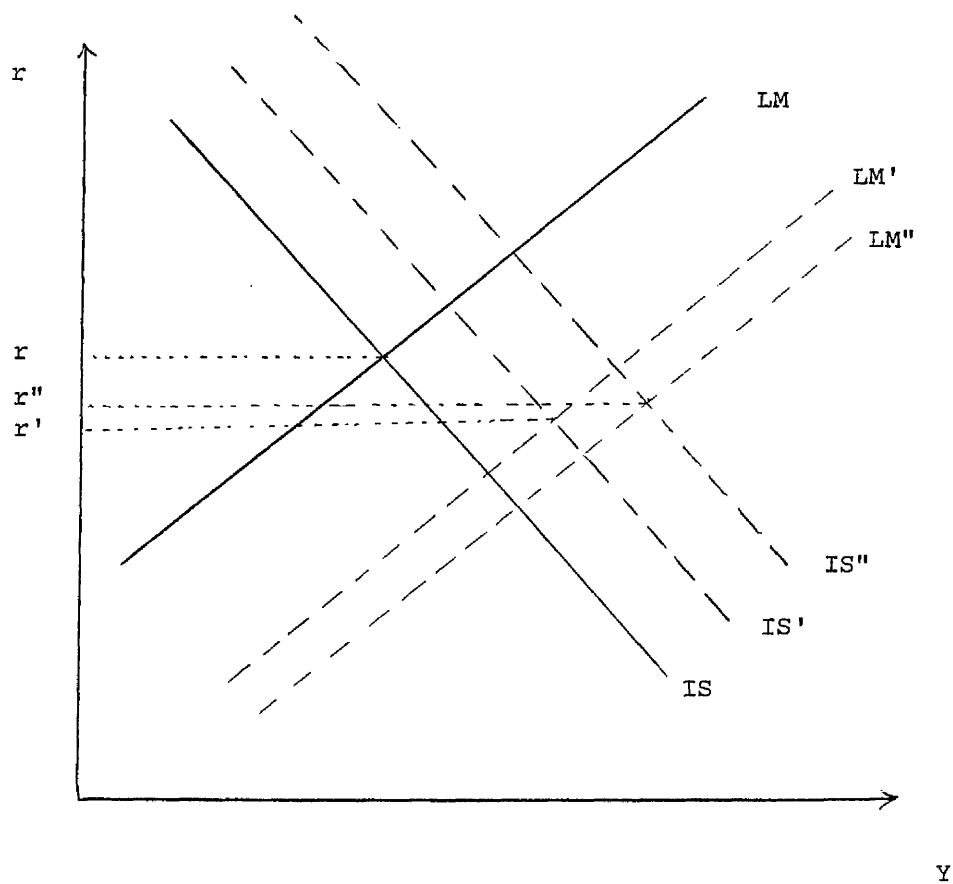
Suppose the initial position is depicted in expected income-interest rate space by curves IS and LM. A favourable shift in business expectations is expressed by an outward shift in IS to IS'. As a result the supply of money rises relative to demand (as idle balances circulate as credit, velocity of circulation speeds up, etc.) causing LM to shift to LM'. The equilibrium interest rate has fallen from r to r' . In the next period, business optimism shifts the IS' curve out further, to IS'', where it reaches its peak. Now, suppose idle balances have all been brought into circulation in the previous period, so that the elasticity of supply of money has fallen (although it is still positive). LM' then shifts out to LM'' by less than the shift from IS' to IS''. The equilibrium interest rate rises again, so that its lowest point was reached in the previous period, before the period in which business optimism peaked.

In summary, the whole process was started off by a change in business expectations, but in this example the elasticity of

Figure 8.1

The Interest Rate in a Business Cycle Expansion

IS-LM Representation



supply of money was so high in the first period, relative to the second, that the interest rate reached its floor before business expectations turned around. Such a general outcome is not unlikely, in fact, when market responses in financial markets may be so much more speedy than in output markets.

Conclusion

The long-run evidence for the U.S. and the U.K. lends strong support for the hypothesis that portfolio structure changes as economic and financial development proceeds. The stock of any financial asset required to finance a particular level of economic activity rises in the long-run relative to that level of activity, at a declining rate, eventually to fall at high stages of development. The turnaround from rise to fall occurs earlier the more liquid the asset. Within the asset structure, the long-run trend is to move towards the less liquid end of the spectrum, although this is partially due to the increasing absolute liquidity supplied by each asset.

The short-run evidence is less clear-cut, in that it is consistent with a variety of interpretations of the role of money in the business cycle. Financial ease during upturns and tightness during downturns is consistent both with the monetarist theory of causation running from monetary conditions to real activity. It is also consistent with the more mutual causation suggested here, whereby expectations as to the value of real and financial assets cause monetary conditions to emerge which then influence the outcome of relative asset values. It is this latter interpretation

which is suggested by the theoretical analysis in the preceding chapters.

In the next two chapters, the evidence is examined for cross-sections of regions and countries, respectively, in order to establish whether the above interpretation of the temporal evidence may be carried over into the context of economies simultaneously at different stages of economic and financial development, and simultaneously experiencing different short-run economic conditions.

Footnotes

1. Transactions velocity was the traditional 'velocity' concept.
See, for example, J M Keynes, A Treatise on Money: The Applied Theory of Money (Cambridge: Macmillan, for the Royal Economic Society, 1971), Chapter 24. An explicit comparison between the two measures of velocity (income and transactions) is made in G Garvy and M R Blyn, The Velocity of Money (New York: Federal Reserve Bank of New York 1969). See also R T Selden, 'Monetary Velocity in the United States', in M Friedman (ed.) Studies in the Quantity Theory of Money (Chicago: Chicago University Press, 1956) pp.179-251 for a thorough discussion of the concepts of income and transactions velocity and a thorough investigation of U.S. historical data.
2. This phenomenon was noted in J M Keynes, A Treatise on Money: The Pure Theory of Money (London: Macmillan, for the Royal Economic Society, 1971) p.223.
3. Estimates of regional differences in transactions velocity excluding New York's financial circulation are described on page in Chapter 9.
4. C Lieberman, 'The Transactions Demand for Money and Technological Change', Review of Economics and Statistics, Vol. 59 (Aug. 1977), pp.307-317.
5. See D E W Laidler, The Demand for Money: Theories and Evidence, second edition (New York: Harper and Row, 1977), pp.148-149, where he surveys the econometric literature on economies of scale.
6. D E W Laidler, 'The Influence of Money on Economic Activity: A Survey of Some Current Problems', in G Clayton, J C Gilbert and R Sedgwick (eds.), Monetary Theory and Policy in the 1970s: Proceedings of the 1970 Sheffield Money Seminar (London: Oxford University Press, 1971).

7. The phenomenon of a rising cash-deposit ratio in the U.S. since the 1960s has been analysed by G Garcia and S Pak, 'The Ratio of Currency to Demand Deposits in the United States', Journal of Finance, Vol. 34 (June 1979), pp.703-715. They demonstrate that the ratio of currency to income has stabilised, while the ratio of demand deposits to income is still falling.
8. See M Friedman and A J Schwartz, A Monetary History of the United States 1867-1960 (Princeton: Princeton University Press, 1963), chapters 8, 10.
9. Ibid., and M Friedman and A J Schwartz, 'Money and Business Cycles', Review of Economics and Statistics, Vol. 45 (1963), Supplement, pp.32-64.
10. Op. cit., pp.192-193.
11. K Brunner and A H Meltzer, 'Monetarism: The Principal Issues, Areas of Agreement and the Work Remaining: Reply', in J L Stein (ed.), Monetarism (Amsterdam: North-Holland, 1976), pp.150-182.
12. P Cagan, Determinants and Effects of Changes in the Stock of Money 1875-1960, (New York: Columbia University Press for N.B.E.R., 1965).
13. Ibid., pp.25 and 26.
14. S H Hymans, 'On the Use of Leading Indicators to Predict Cyclical Turning Points', Brookings Papers on Economic Activity No. 2 (1973) pp.339-375.
15. D J O'Dea, Cyclical Indicators for the Postwar British Economy, N.I.E.S.R., Occasional Paper No. 28 (Cambridge: Cambridge University Press, 1975), p.44.
16. Op.cit.
17. The indicators series was introduced in C.S.O., 'Cyclical Indicators in the U.K. Economy', Economic Trends, No. 257 (March 1975), pp.95-109.

A recent update of the procedure is found in C.S.O., 'Cyclical Indicators: Some Developments and an Assessment of Performance', Economic Trends, No. 319 (May 1980), pp. 82-87.

Chapter 9 THE REGIONAL EVIDENCE

Introduction

The theoretical discussion of financial differences was conducted in such a way as to draw out the basic similarities between regional differences and international differences. This chapter will however concentrate on the regional evidence and the next on the international evidence. The purpose of distinguishing between the two contexts at this stage is, first, to recognise institutional differences between them, and, second, to recognise that this use of regional data for studying financial differences is rather more novel than a similar use of international data.

The temporal data referred to in Chapter 8 lent support to the hypothesis that economies adopt portfolios towards the less liquid end of the liquidity spectrum the greater the degree of financial development; this process is partly the result of the increasing supply of liquidity represented by each type of asset as a result of financial development. In the regional, spatial, context then, the equivalent hypothesis is that preferred portfolios are closer to the less liquid end of the liquidity spectrum the more sophisticated the region's financial structure, although the actual supply of liquidity associated with each asset will be an increasing function of financial sophistication.

Classification of regions by degree of financial sophistication encounters the same problems as does any regional classification given the great diversity that exists within any region. Thus, for example, businessmen in a city in a rural region remote from the financial centre may have greater access to that centre than low-income families in the urban core surrounding the financial district of that centre. Nevertheless, taking the cross-section from large businesses to low-income individuals within any region, it is reasonable to suggest that, overall, there is a lesser degree of financial sophistication the further that region is from the centres of financial activity. In turn, the centres of financial activity tend to coincide with current or recent high levels of economic activity, and high per capita incomes. Per capita income, then, will be used in the regional context, as in the temporal context, as a proxy for the degree of financial development.

The second hypothesis for which the temporal evidence lent support was that short-run fluctuations in real output induce responses which correspond to the long-run responses of supply of and demand for money which accompany economic development. Thus, when expectations develop of real expansion, the demand for money falls (there is a move along the liquidity spectrum, particularly into corporate securities and capital goods) while the supply of money rises. The reverse occurs during a downturn.

In the regional context (as in the international context) it has been suggested that this process may be accentuated, particularly on the supply side, by financial interrelationships between regions. In particular, the relative openness of regional economies increases the elasticity of supply of finance.

The same difficulties of classification of regions by short-run economic conditions emerge as for classification by degree of financial sophistication. The problems are somewhat less severe, however, in this case. General economic conditions tend to touch all agents within a region. In particular, the expected value of assets, from human capital, to local trade credit, to plant and machinery, depends on the level of activity in the markets for those assets, and the expectations of those engaged in transactions. Clearly there are exceptions to such a rule, but on a general level it is possible (and indeed a frequent practice) to classify regions as high-growth or stagnant, or somewhere in between. For this purpose also, we will continue with the proxy of per capita income as a barometer of a regional economy's health, making qualifications as appropriate when discussing actual cases.

The two sets of regions chosen for inspection are the Canadian provinces and the U.S. Census Regions. The choice was influenced by the federal structure of both countries, which generates regional data in detail which is not generally available for unitary states. In addition, however, the two countries offer an interesting comparison between a nationwide,

centralised financial structure, as in Canada, and one with a more regionally-segmented financial structure, as in the U.S. First, however, reference is made in the next section to such regional evidence as is available for the U.K.

The U.K. Regions

Before continuing to study these two cases, this brief section will discuss the U.K. regional evidence. First, Table 9.1 shows per capita GDP for each region relative to the national average for selected years in the period 1966-1978. This evidence suggests continuing income disparities between the regions, but disparities which are gradually diminishing over time. In 1956, per capita GDP as a percentage of the national level ranged from 62.5% for Northern Ireland to 114.4% for the South-East. By 1978 the range for the same two regions was reduced to 76.9% to 113%. In terms of ranking, the North started in rank 2 and ended in rank 4, Scotland started in rank 4 and ended in rank 8, and the East Midlands moved up from rank 9 to rank 10; otherwise the ranking was quite stable.

An extensive search of potential sources has revealed that there is a paucity of regional financial data for the U.K. The banks do not classify their data regionally. The London Clearing Banks: Scottish Banks: Irish Banks classification is not particularly useful, even for such a broad regional classification, because any comments on differences in portfolio structure over a time period must be qualified to a great extent by reference to different legislation and traditions.

Table 9.1

GDP at factor cost per capita

U.K. regions:¹ 1966-1978 (Selected Years)

<u>Regions</u> (Ordered by 1978 ranking)	<u>1966</u>	<u>1970</u>	<u>1974</u>	<u>1978</u>
	(as % of U.K. average)			
Northern Ireland	62.5	68.7	75.0	76.9
Wales	85.7	86.1	87.6	89.2
South West	93.2	93.5	92.8	91.9
North	84.0	84.8	92.1	93.8
East Anglia	95.6	96.0	92.5	94.3
Yorkshire or Humberside	96.4	94.2	94.9	95.0
North West	96.1	94.5	96.4	96.4
Scotland	88.9	91.1	95.0	96.8
West Midlands	108.1	104.3	100.2	97.3
East Midlands	98.4	96.4	95.7	97.3
South East	114.4	115.6	113.6	113.0

1 Excludes Continental Shelf, since no resident population.

Source: C.S.O., Regional Statistics, Table 15.1

Nevertheless, the implications of the different structure of Scottish bank assets for the money multiplier in Scotland has been noted by Gaskin.¹ In addition, the tendency for capital to flow out of rural regions to London has been noted by Morgan.²

A study was recently completed at the University of Durham³ which is the most comprehensive available collection of financial data for the U.K. regions. Unfortunately, all the currency and banking data had to be imputed as being proportionate to regional income, due to lack of hard information. The Building Societies do however provide data on net receipts and net advances by region. This information is provided with the latter as a proportion of the former, to give an indication of Building Society flows of funds, in Table 9.2. A higher proportion indicates a higher degree of retention of funds within each region.

The ratios do show some tendency to be higher in the higher per capita income regions (the regions are ordered in the table in terms of their 1978 per capita GDP ranking). The major exceptions to this rule are Northern Ireland and the South West, which have a high retention ratio relative to their income ranking, and the North West and West Midlands whose retention ratio is relatively low in some years. This meagre evidence does suggest that there may be a redirection of savings to regions with high expected increases in property values. But, for completeness, the use of the remaining portions of net receipts would have to be known. If the

Table 9.2

Building Society Net Advances as a Share of Net Receipts

U.K. Regions: 1974/75 - 1977/78

<u>Region (Ordered by 1978 per capita GDP ranking)</u>	<u>1974/75</u>	<u>1975/76</u>	<u>1976/77</u>	<u>1977/78</u>
	(%)	(%)	(%)	(%)
Northern Ireland	25.8	75.9	153.1	90.1
Wales	48.2	54.5	82.1	51.2
South West	95.9	62.7	111.5	60.1
North	26.9	60.3	96.4	58.0
East Anglia	34.8	63.0	119.7	66.2
Yorkshire and Humberside	44.1	64.3	131.9	76.9
North West	49.2	48.3	72.8	49.8
Scotland	71.9	83.6	165.3	68.9
West Midlands	94.4	66.5	121.0	64.5
East Midlands	88.5	80.4	163.3	86.6
South East	80.7	88.9	171.7	80.9

Source: J Short and D J Nicholas, A Study of Money Flows in
the Regions of the United Kingdom 1974/75 to 1977/78 (Durham,
1979), Appendix 3, pp.62-63.

remaining funds are held primarily in government and private sector securities, issued primarily in London, then there would be an additional flow into the South East region initially. But no statement may be made as to the ultimate distribution of funds once deployed by the borrowers.

The Canadian Provinces

The Canadian provinces are characterised by a greater degree of disparity than the U.K. regions. Per capita Gross Provincial Product (GPP) is shown in Table 9.3 as a percentage of the national average over the period 1961-1978 (1961 being the earliest year for which GPP is estimated). Excluding Alberta, the degree of disparity has been reduced over the period. In 1966, the ratios range from 48.3% for Newfoundland to 120.1% for Ontario; by 1978 the range had been reduced from 51.7% for Prince Edward Island to 109.9% for British Columbia. Alberta has however increased its ratio from 107.8% in 1966 to 143.5% in 1978, reflecting the rapid rate of growth of oil-related business in the province. Saskatchewan, an oil producer to a lesser extent, is also heavily dependent on agriculture. The large income fluctuations due to fluctuations in farm income before the 1970s have now been superseded by strong oil-related growth. The traditional financial centres are Toronto in Ontario and Montreal in Quebec,⁴ but a large proportion of banking business has emerged in recent years in Alberta to finance the oil-related expansion.

Table 9.3

Gross Provincial Product Per Capita

Canadian Provinces: 1961-1978 (Selected Years)

Provinces (in order of 1978 ranking)	<u>1961</u>	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1978</u>
	(as % of Canadian average)				
Prince Edward I.	49.5	48.5	52.1	53.9	51.7
Newfoundland	48.3	51.8	55.3	53.9	52.4
New Brunswick	60.8	61.3	63.4	65.0	63.1
Nova Scotia	65.7	63.4	67.8	68.0	66.8
Quebec	91.3	90.1	89.6	87.9	89.3
Manitoba	90.0	86.9	90.2	93.0	89.7
Saskatchewan	76.4	98.0	85.4	103.6	101.6
Ontario	120.1	118.0	117.8	109.3	106.2
British Columbia ¹	110.8	109.0	106.3	106.9	109.9
Alberta	107.8	106.9	107.7	135.9	143.5

1 Includes Yukon and North-West Territories

Source: Statistics Canada, Catalogue 13-213 and 91-201

In order to assess the hypothesis that financial sophistication is positively related to per capita income, Table 9.4 sets out information on the rate of bank deposit turnover in each province over the period 1974 to 1978. (Data on bank portfolios by province are only available from 1974.) The relationship is not in fact very close, indicating that other factors predominate. Both Quebec and Ontario stand out as having particularly high rates of turnover, consistent with the suggestion that proximity to a financial centre was important. The higher rate of turnover near financial centres must be due partly to the higher incidence of financial circulation relative to industrial circulation. (Estimates of financial centre transactions velocity excluding financial circulation are not available for Canada, but estimates for the U.S. are noted in the next section.)

The notably low rate of turnover in Saskatchewan can be explained by the high rural content of the population, with low proximity even to the province's financial centre, Regina. Newfoundland is an anomaly for which investigations present no obvious explanation. Taking polar cases, however, as in the theoretical analysis, there is evidence to support the hypothesis that the transactions velocity of circulation will be lower in a low-income region remote from the financial centre (the four Atlantic provinces aggregated, i.e. Prince Edward Island, Newfoundland, New Brunswick and Nova Scotia) than in a higher-income region containing a financial centre, such as Ontario.

Table 9.4

Rate of Turnover¹ of Demand Deposits²

Canadian Provinces 1974-1978 (Selected Years)

<u>Provinces (ordered by 1978 per capita income ranking)</u>	<u>1974</u>	<u>1976</u>	<u>1978</u>
Prince Edward I.	68.0	75.1	69.3
Newfoundland	113.3	143.2	148.2
New Brunswick	86.5	107.1	88.0
Nova Scotia	87.9	98.8	102.7
Quebec	197.8	234.7	226.7
Manitoba	180.5	221.0	188.8
Saskatchewan	60.6	63.2	64.8
Ontario	197.2	227.8	266.7
British Columbia ³	101.4	116.9	122.3
Alberta	101.8	125.8	130.1

1. Cheque cashings divided by demand deposits. Cheque cashings data have been adjusted upward by the estimated percentage under-coverage of the survey as provided in Statistics Canada, Catalogue 61-201.
2. Demand deposits total exclude federal government deposits since clearings data exclude clearings of federal government deposits.
3. Includes Yukon and North-West Territories.

Sources: Statistics Canada, Catalogue 61-201 and 61-001
Bank of Canada Monthly Review Tables 12,13.

This suggested relationship between deposit levels and transactions is adequately measured by deposits held with bank branches in a region and debit clearings by those branches. The measure of income velocity is made more difficult by the fact that bank deposits held by the residents of a region may not correspond to deposit liabilities of bank branches within that region. In particular, since the head offices of many Canadian corporations are situated in Ontario, as are the major financial markets, deposits in Ontario branches will tend to overstate the deposits owned by Ontario residents while the deposits in, say, Atlantic province branches will tend to understate the deposits of Atlantic Region residents. (The problem is of course compounded by the associated difficulty in allocating the product of multi-province corporations among provinces when compiling GPP data.)

Table 9.5 shows the relationship between GPP and bank deposits for 1978, also comparing rates of growth in each for each province over the period 1974-1978. Because of the difficulties outlined above, the data cannot be very informative; it can nevertheless be suggested that the measure of velocity approximated in this table overstates velocity for provinces other than Ontario and perhaps Quebec, and understates velocity for those two provinces.

The significance of cross-section income velocity data is influenced also by the fact that deposit levels incorporate demand as well as supply conditions. (If each region is subject

Table 9.5

Income and Deposits: Velocity and Rates of Growth

Canadian Provinces: 1978 and 1974-1978

Provinces (Ordered by 1978 per capita GPP ranking)	GPP	GPP	(a) (b) Rates of Growth (1974-1978)		(a) (b)
	Demand	Total	GPP	Bank Liabilities	
	%	%	%	%	%
Prince Edward I	7.8	1.7	65.7	71.4	92.0
Newfoundland	11.4	2.3	64.3	84.5	76.1
New Brunswick	9.7	2.1	60.3	84.6	71.3
Nova Scotia	9.9	2.0	60.2	74.6	80.7
Quebec	11.7	2.2	57.3	72.4	79.1
Manitoba	9.6	2.0	53.2	71.4	74.5
Saskatchewan	9.2	2.1	57.1	58.8	97.1
Ontario	8.9	1.6	47.6	86.1	55.3
British Columbia ¹	8.9	1.8	63.0	77.5	81.3
Alberta	8.6	2.0	84.4	117.4	71.9

1 Includes Yukon and North West Territories

Sources: Statistics Canada, Catalogue 13-213

Bank of Canada, Monthly Review, Table 13.

to its own supply curve as well as demand curve, there is a marked problem of identifying demand curves from cross-sectional observations.) If indeed, as is suggested in Chapter 7, a higher demand for money is associated with a lower supply of money, then actual money holdings will not deviate significantly from some 'norm' (around 2.0 in this case) similar to that represented by the intersections of successive demand and supply curves as depicted in Figure 7.1. Again, while the evidence is consistent with the monetarist hypothesis of a stable income velocity, it is also consistent with the alternative hypothesis proposed here, that actual holdings are the result of conflicting demand and supply responses.

Some clue as to the underlying dynamic forces is provided by the relative rates of growth of income and bank liabilities in each province. As demonstrated in Table 9.5, the Atlantic provinces have been catching up in terms of relative per capita income. Table 9.5 shows that this has been associated with a similarly high growth rate of bank liabilities. But the highest rate of growth of liabilities has been experienced by Ontario, in spite of a relative fall-back in terms of GPP growth rates (because of its role as financial centre) and Alberta, with the highest GPP growth rate. Quebec, Manitoba and Saskatchewan, which had the lowest relative rates of growth of GPP, also had low rates of growth of bank liabilities.

Some data on the composition of assets held by residents in the Canadian regions is provided by a wealth study conducted in 1970.⁵ (Unfortunately no such study has been conducted since then.) Table 9.6 sets out the information made available by this study, with the regions ranked by per capita income, starting with the lowest. As might be expected, higher per capita income is associated with higher total value of assets; British Columbia is the exception, with relatively high asset holdings, which may be explained by the relatively large proportion of the population being immigrant retirees from other provinces. The proportion of assets held in financial form is relatively high in the Atlantic provinces and the Prairie provinces: both relatively remote from the financial centres (at least in 1970) in Toronto and Montreal, and both with economies relatively dependent on primary production. Both Ontario and Quebec, which house the two major financial centres, are below the Canadian average of 28% of assets held in financial form. But, as the second-lowest per capita income region in this grouping, Quebec conforms to the prediction of the theory presented here in holding a relatively high proportion of financial assets in liquid form. The Atlantic provinces and the Prairie provinces similarly have an above-average liquid financial assets ratio, while British Columbia and Ontario are well below average.

This general pattern is confirmed by the data on assets by income class for the entire national sample covered by the same study. Table 9.7 shows that, within financial assets, the structure of

Table 9.6Composition of AssetsCanadian Regions: 1970

Region (ordered by 1970 sample per capita income ranking)	<u>Average Total Assets</u>	<u>Financial Assets</u>	<u>Liquid Assets</u> ³
	Canadian Average %	Total Assets as % of Can. Average	Financial Assets as % of Can. Average
Atlantic ¹ Provinces	63.7	108.9	101.2
Quebec	72.1	95.7	119.6
Prairie ² Provinces	100.2	115.4	111.5
British Columbia	126.8	100.7	87.4
Ontario	119.9	95.0	93.6
Canada	100.0	100.0	100.0

1 Prince Edward Island, Newfoundland, Brunswick and Nova Scotia

2 Manitoba, Saskatchewan and Alberta

3 'Liquid assets' comprises cash on hand, bank and other deposits and government and other bonds.

Source: Statistics Canada, Catalogue 13-547, Table 77.

Table 9.7

Composition of Assets by Income Class

Canada: 1970

<u>Average Income</u> ($\text{\$}$)	<u>Currency</u> <u>Demand Deposits</u> ($\%$)	<u>Total Liquid Assets</u> <u>Financial Assets</u> ($\%$)	<u>Financial Assets</u> <u>Total Assets</u> ($\%$)
Under 5,000	8.0	78.1	30.6
5,000-9,999	9.1	74.3	24.0
10,000-14,999	6.0	62.4	22.6
15,000-24,999	5.0	59.3	30.7
25,000 and over	5.2	39.4	46.2

Source: Statistics Canada, Catalogue 13-547, Tables 12 and 51.

portfolios is more liquid the lower the income level. Thus, for example, the ratio of currency holdings to demand deposits tends to fall as income rises; similarly the ratio of total liquid assets to total financial assets falls markedly as income rises. The distribution of total assets between financial assets and real assets does not show any distinctive pattern.

The composition of financial assets is a reasonable indicator of liquidity preference in that the constraining power of the supply of liquidity affects the total amount of financial assets rather more than their composition. (Within a national financial system, many, although by no means all, financial assets may be traded for other financial assets of differing liquidity.) In order to obtain information on the supply side relative to demand, information on net flows is required. Table 9.8 is a compilation of disparate pieces of information from which net non-bank capital flow data may be derived as a residual.

In the first column are shown net exports (a minus sign indicating an excess of import value over export value, and thus a financing outflow). The net positions are shown as a proportion of GPP as a scaling factor (as are all the data in the table). The four Atlantic provinces have particularly large trade deficits. The largest surpluses in relative terms are earned by the two oil-producing provinces, Saskatchewan and Alberta. There is a strong correspondence between these trade balances and the net flow of funds with respect to the

Table 9.8

Inter-Provincial Financial Flows¹

Canadian Provinces: 1978

Provinces (Ordered by 1978 per capita income ranking)	Net Exports ²	Federal Government Net Surplus(-)/ Deficit (+) ³	Net Banking System ⁴ Flows	Net Non-Bank Capital Flows ⁵
(as % of GPP)				
Prince Edward I.	-58.2	52.6	4.1	1.5
Newfoundland	-33.4	38.8	16.2	10.8
New Brunswick	-28.1	28.5	6.3	-6.7
Nova Scotia	-31.4	31.7	4.3	-4.6
Quebec	0.6	6.5	1.7	-8.8
Manitoba	- 6.0	9.4	6.8	-10.2
Saskatchewan	5.6	5.9	2.1	-13.6
Ontario	3.7	1.3	-5.8	-0.8
British Columbia	- 0.7	1.9	6.0	-7.2
Alberta ⁶	7.2	-4.8	8.2	10.6

1. Negative sign denotes net outflow of funds, positive sign net inflow.
2. 'Net exports' refers to trade in goods and services. The data constitute the residual of the provincial expenditure accounts, and thus also include the residual error of estimate of GPP.
3. Measured on national accounts basis.
4. Measured by difference between banks' assets and liabilities assigned to each province.
5. Share of GPP which allows four columns of table to sum to zero, i.e. balancing financial flow.
6. Includes Yukon and North West Territories.

Sources: Statistics Canada, Catalogue 13-213
Bank of Canada Monthly Review, Tables 12 and 13.

federal government. (The net federal surplus or deficit is an all-encompassing figure including all transfers and expenditures, net of revenue, on a national accounts basis). One interpretation is that the federal government in effect finances the trade imbalances of the provinces. An alternative interpretation is that federal government expenditure is subject to a very high import leakage.

The role of government in offsetting trends in expectations which might otherwise lead to divergent regional growth patterns was stressed in earlier chapters. Indeed, Table 9.3 shows a relative narrowing of the gap in terms of per capita provincial product, while Table 9.8 shows a strong negative correlation between per capita provincial product and the net federal deficit within each province .

Econometric studies of the Canadian provinces by Guccione and Gillen⁶ and Miller⁷ confirm the hypothesis of a positive relationship between the marginal propensity to export and per capita income across regions and a negative relationship between the marginal propensity to import and per capita income across regions. (The former could alternatively be expressed as a larger export-income multiplier the higher the income.) Because of the lower import leakage rate the higher the income, both studies suggest a higher income and employment multiplier the higher the per capita income level of the province. Miller pursues the multiplier process further, in a manner consistent with our analysis of the money multiplier in Chapter 6. He

shows that the import leakage rate is not so high in any province that a selective fiscal policy concentrating on depressed regions for expansion would not have a positive effect in those regions, i.e. the regional multipliers are all non-zero. The overall national multiplier for federal expenditures directed at the poorer provinces would be less than for a non-selective fiscal policy, but the regional composition would nevertheless favour the depressed regions. Miller thus shows that the national fiscal multiplier and its regional composition are influenced by the location of the initial expenditure. At the same time, it should be recognised that, because government spending has a higher relative regional multiplier effect in the higher income provinces, the lower net federal deficit relative to GPP shown in Table 9.8 must reflect the higher GPP generated by government expenditure as much as federal government redistribution to the lower-income regions.

Neither of these econometric studies includes a monetary sector, owing to the absence of good regional monetary data. The publication of provincial banking data since 1974 in fact constituted a response by the banks to charges of using the deposits of the four Western provinces' residents to finance investment in Ontario.⁸ A significant proportion of the banks' provincial assets are inputted from national data, and the liabilities data do not allocate liabilities by province of residence or major activity of the companies involved (rather they are allocated by location of deposit). With these qualifications, the net difference between assets and

liabilities by province were held to represent redistribution of funds by the banks in favour of the non-central provinces.⁹

The third column in Table 9.8 shows this net flow as a proportion of GPP. Only Ontario experiences a net outflow, although the excess of deposits over Ontario assets could in fact be more than made up by deposits made by residents of other provinces. In turn, an asset total which is high relative to deposits in low-income provinces could reflect the relatively low deposit multiplier effects of local lending as much as a 'redistributive' lending policy by the banks.

Before considering further indications of expected rates of return on lending in each province, some interesting information is provided by the fourth column in Table 9.8 which represents the residual capital flow which finances the flows of goods and funds associated with the trade account, the public sector and the banking system. Prince Edward Island and Newfoundland are shown as acquiring a net capital inflow. All others experience a net outflow except Alberta, which has attracted large amounts of funds to finance expansion of oil-related industry. Ontario, significantly, has only a marginal outflow in spite of the high marginal returns available in Alberta.

The provincial demand for credit will be higher the higher the rate of return on capital; supply in turn will be attracted by relatively high returns. Table 9.9 sets out a ranking of the estimated rate of return on capital in each province over the period 1961-1978. Comparing this table with Table 9.3 suggests

Table 9.9

Rate of Return on Capital¹Canadian Provinces: 1961-1978 (Selected Years)

Province (Ordered by 1978 per capita income ranking)	<u>Ranking²</u>				
	<u>1961</u>	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1978</u>
Prince Edward Island	5	6	7	2	1
Newfoundland	1	1	3	1	4
New Brunswick	2	3	1	6	5
Nova Scotia	3	2	2	5	2
Quebec	4	9	8	8	8
Manitoba	6	5	4	4	3
Saskatchewan	8	4	6	3	6
Ontario	10	10	10	9	9
British Columbia ³	7	7	5	7	7
Alberta	9	8	9	10	10

1 Calculated as \bar{r} from dividing corporate profits before taxes as a share of GPP (rK/Q) for the relevant years by the capital/output ratios for each province (K/Q) for the period 1970-1973, as estimated by the Economic Council of Canada.

2 Lowest value of \bar{r} assigned rank 1

3 Includes Yukon and North West Territories

Sources: Statistics Canada, Catalogue 13-213
Economic Council of Canada, Living Together: A Study of Regional Disparities (Ottawa, 1977), p.85

a strong positive relationship between per capita income level and the rate of return on capital. This observed relationship runs counter to the neo-classical argument that regional imbalances are corrected by increasing marginal returns to factors attracting business back to declining regions. In the Canadian case, it seems that reduced activity is associated with lower marginal returns to capital, which encourage further reductions in activity and an outflow of capital.

An indication of the elasticity of the demand for credit function by province is given by the coefficient of the interest rate term in Miller's¹⁰ provincial investment demand function for the period 1961-1974. This estimated coefficient is set out in the first column of Table 9.10. These estimates suggest that a given rise in national interest rates will reduce investment most in the lower income provinces, and more in the two western provinces, Alberta and British Columbia, than in the central provinces. In general, changes in monetary conditions are associated with the widest fluctuations in investment cycles in the low-income provinces, and the smallest in the financial centres.

These data could be viewed as reflecting supply conditions as much as demand differences; if there is rationing of credit during periods of monetary tightness, for example, this is likely to be most severe in provinces with a low return to capital (identified in Table 9.9). Investment demand in the low-income provinces may thus be curtailed during periods of national monetary tightness by constraints on the supply of credit. In other words, the high interest elasticity of actual investment may be more a supply phenomenon than a demand phenomenon.

Table 9.10

National Monetary Conditions and Provincial Demand
Canadian Provinces:1956-1974

<u>Province</u>	$\frac{\Delta I}{\Delta i}^1$	$\frac{M}{Y} \frac{\Delta Y^2}{\Delta M}$
Prince Edward Island	0.29	
Newfoundland	0.30	
New Brunswick	0.28	
Nova Scotia	0.22	
Quebec	0.20	
Manitoba	0.20	0.845
Saskatchewan	0.15	0.568
Ontario	0.19	
British Columbia	0.24	
Alberta	0.23	1.130

1. 1961-1974

2. 1956-1971

Sources: F C Miller, 'The Feasibility of Regionally Differentiated Fiscal Policies', University of Guelph Department of Economics Discussion Paper No. 1979-6 (1979), Table 1, pp.9-10

J B Beare, 'A Monetarist Model of Regional Business Cycles', Journal of Regional Science Vol. 16 (1976), pp.57-63.

Further, while rationing only occurs when interest rates rise, unsatisfied loan demand could be held over until monetary conditions slacken. Interest rate reductions would then be accompanied by an exaggerated rise in borrowing, represented by new demand added to unsatisfied old demand. Rationing would thus be associated with greater volatility in investment both during interest rate increases and decreases. A relative absence of rationing (i.e. greater scope for market forces to operate) in higher-income regions might however be expected to promote greater interest sensitivity. But this effect may be overridden by a relatively greater access to internal sources of finance in these regions, which would tend to reduce interest sensitivity among business investors. In other words, whether or not there is rationing, businesses in the poorer regions with lesser internal funds will be more constrained by national monetary conditions.

Beare,¹¹ in extending the Friedman-Meiselman debate to the Canadian Prairie Provinces, arrived at an econometric relationship between provincial income and the national money supply. The elasticities are transcribed in Table 9.10 for the three Prairie provinces. Alberta has a noticeably stronger relationship between the national money supply and provincial income than Manitoba or Saskatchewan. This cannot be fully accounted for by the difference in interest elasticity of investment. Rather, given the relatively high-growth experience of Alberta, it seems that a relatively large proportion of any increase in the national credit total is made available to finance expenditure in Alberta.

It is conventionally assumed, when discussing flows of funds within a national banking system, that interest rates are uniform nationwide. In fact, while the banks do have uniform interest rate structures, there is scope for differentiation between interest charges within that structure on grounds of relative riskiness; this differentiation could conform roughly to a regional pattern, but there is no good evidence on which to base an assessment. Evidence of a non-rigorous nature is provided by studies such as that conducted by Sears¹² of the lending behaviour of managers of rural bank branches. For a variety of reasons, this behaviour is more risk-averse than that of their counterparts in city branches, so that rural borrowers on average either bear relatively high interest costs or are excluded by rationing.

Some hard information which provides an indicator of lenders' attitudes to different provinces in Canada relates to the borrowing of the provincial governments. Table 9.11 shows the credit ratings assigned to each province in 1977-78 and the yield spread on Canadian and U.S. bond issues. Yield spreads are subject to market conditions at the time of issue, as well as the terms of the bonds; nevertheless, there is in general a higher interest rate on debt issued by the lower-income provinces, particularly Newfoundland. The credit ratings give a more general (not market-specific) indication of risk-assessment by lending agents. The three Atlantic provinces with ratings all have lower ratings than the other provinces. Ontario has

Table 9.11

Credit Ratings and Yield Spreads

Canadian Provinces: 1977-1978

<u>Provinces</u> (Ordered by 1978 per capita GPP ranking)	<u>Credit Ratings</u>		<u>Yield Spreads</u> ¹	
	<u>Moody's Investor Service</u>	<u>Standard & Poor's</u>	<u>US Paybonds</u>	<u>Canada Paybonds</u>
Prince Edward I	N/A	N/A	N/A	N/A
Newfoundland	Baa	A	+70	+69
New Brunswick	A1	A+	+34	+28
Nova Scotia	A1	A+	+35	+21
Quebec	Aa	AA	+77	+48
Manitoba	Aa	AA	+12	+15
Saskatchewan	Aa	AA	+11	- 3
Ontario	Aaa	AAA	0	0
British Columbia	Aa	AA	+12	+18
Alberta	Aa	AA	N/A ²	-10

N/A Not applicable

Source: Government of Canada, Quebec's Access to Financial Markets,
a report in the series Understanding Canada, Ottawa, 1979, p.16

1 Average yield spread relative to Ontario from June 1977 to May 1978

2 Alberta has not in fact borrowed in the US since 1969.

a higher rating than all the others, in spite of having slipped from its position of having highest per capita income, both because it houses the major financial centre, but also because its economic base has been more stable over a longer time than that of the Western provinces.

These differences in ratings and yield spreads are particularly interesting as an indication of the subjective component in risk-assessment. Given the wide taxing powers of the provincial governments and the revenue equalisation payments received from the federal government, the risk of default on the part of a province appears to be minimal. In addition, the Revenue Stabilization Program introduced in 1967 ensures that the federal government will make unconditional payments to any province whose total revenues fall short of the previous year's total due to a downturn in economic activity.¹³ This program has been advertised widely by provinces when borrowing, particularly in foreign markets; it has never actually been used.

The U.S. Census Regions and Federal Reserve Districts

As with the Canadian regions, the U.S. regions have experienced a narrowing of the gap in relative per capita income levels. Regional data are available over a much longer time period for the U.S. showing that the process of convergence has not been a continuous one. Table 9.12 shows the trend in per capita income in each census region as a percentage of the national average over the period 1840-1978; the process of convergence is evident only

Table 9.12

Per Capita Personal Income

U.S. Regions: 1840-1978 (Selected Years)

Region (Ordered by 1970 per capita income ranking)	1840	1880	1920 (as % of U.S. Average)	1960	1970	1978
East South Central	73	51	52	67	74	81
West South Central	144	60	72	83	85	93
South Atlantic	70	45	59	77	86	93
Mountain	-	168	100	95	90	95
West North Central	75	90	87	93	95	98
New England	132	141	124	109	108	102
East North Central	67	102	108	107	105	105
Middle Atlantic	136	141	134	116	113	105
Pacific	-	204	135	118	110	112

Source: U.S. Dept of Commerce, Historical Statistics of the United States: Colonial Times to 1970, Series F 287-296, and Statistical Abstract of the United States, 1979, Table 730.

from the 1920s.¹⁴ Since the 1920s, each region's share has approached closer to the national average, although the Pacific region diverged from this path in an upward direction in the 1970s. Convergence in recent years has been explained primarily by converging labour earnings, assisted by a shift out of the agricultural sector in lower-income regions (particularly the South); these converging earnings patterns have also been reinforced by convergence also in unearned income (including transfer payments).¹⁵

As with Canada, there is no complete set of accounts for U.S. regions which measures the composition of financial portfolios in each sector in each region and the flows between them. Rather, the following evidence is drawn from a variety of sources. The U.S. evidence supports the hypothesis of increasing financial efficiency with proximity to financial centres and/or with per capita income. Table 8.3 in the last chapter showed the rate of turnover of bank deposits over the period 1945-1975 as being consistently higher in New York than in other leading centres, and higher in those centres than elsewhere. Nor can these difficulties be attributable solely to the higher incidence of financial circulation than industrial circulation in the financial centres. Garvy¹⁶ estimates for 1959 that the annual rate of turnover of deposits of government securities dealers was 11,264, and 299 for all other securities brokers and dealers. For the remaining New York City deposits (which thus represent primarily industrial circulation) the rate of turnover was only 34.4, but

this is still higher than the overall average of 31 in the other six leading financial centres and 24 in all other reporting centres.

A further indication of more efficient use of money balances (and/or their greater liquidity) near financial centres and by higher income groups is given by data produced on use of credit cards. Table 9.13 shows highest usage of credit cards in the West and lowest in the South, corresponding to the income rankings in Table 9.12. The second part of the table shows the spatial breakdown within regions. The largest Standard Metropolitan Statistical Areas (SMSAs) are more disparate than other SMSAs, with the highest credit card usage in the suburbs (72%) but relatively low usage in the urban core. Usage declines relatively with proximity to SMSAs. Table 9.14 confirms this pattern in terms of usage by income class, with usage rising as income rises (except in the highest income bracket).

Before moving on to the regional data as such, some information may be gleaned on portfolio composition by national income class; the implications drawn from these data may then be translated into regional terms insofar as regional financial differences are represented by income differences. First, Table 9.15 shows the composition of personal wealth for those persons in the top $\frac{1}{2}$ % of wealth-holders, and those in the top 1%, compared with the average for all persons, over the period 1958-1972. The three assets are arranged in order of liquidity. There is a clear difference in liquidity preference between the top wealth holders and the rest, with a higher liquidity preference the lower the

Table 9.13

% of Families using Credit Cards, by Location

U.S.: 1970

<u>Region</u>	<u>% Use</u>
South	42
North East	48
North Central	52
West	67

Belt

Central cities of 12 largest SMSAs ¹	43
Central cities of other SMSAa	52
Suburban areas of 12 largest SMSAs	72
Suburban areas of other SMSAs	61
Adjacent areas	45
Outlying areas	37

1 SMSA: Standard Metropolitan Statistical Area

Source: L Mandell, Credit Card Use in the United States
(Ann Arbor: Institute for Social Research 1972),
p.16

Table 9.14

% of Families using Credit Cards, by Income Class

U.S.: 1970

<u>Annual Family Income (\$)</u>	<u>% Use</u>
Less than 3,000	17
3,000 - 4,999	24
5,000 - 7,499	39
7,500 - 9,999	54
10,000 - 14,999	67
15,000 - 19,999	74
20,000 - 24,999	84
25,000 and over	81

Source: L Mandell, Credit Card Use in the United States
(Ann Arbor: Institute for Social Research, 1972),
p.14.

Table 9.15
Composition of Financial Assets by Wealth Class¹
U.S.: 1958-1972 (Selected Years)

	1958	1962	1969	1972
	(as % of total financial assets)			
Money ²				
All persons	38.0	33.8	34.0	42.2
Top 1%	12.2	12.4	12.6	14.7
Top ½%	9.8	10.0	10.1	5.3
Bonds				
All persons	15.4	12.0	9.0	8.8
Top 1%	13.4	11.1	12.6	13.8
Top ½%	13.6	11.5	13.3	15.2
Corporate Stock				
All persons	46.6	54.3	56.9	49.0
Top 1%	74.3	76.5	74.8	71.4
Top ½%	76.6	78.5	76.5	79.5

1 'Top 1%' and 'Top ½%' of population refer to ranking
in terms of gross personal assets

2 Currency, demand deposits and savings deposits

Source: U.S. Dept of Commerce, Statistical Abstract of the
United States, 1979, Table No. 775.

wealth. The relatively lower money balances of the top wealth-holders are matched by relatively large holdings of corporate stock.

Corporations similarly display a relatively high liquidity preference when assets are small. Table 9.16 provides information on the portfolio composition of corporations by asset size, as reported for tax purposes in 1975. In general, cash holdings account for a higher percentage of assets the lower the value of total assets. While total current assets do not mirror this relationship, they do when combined with current liabilities to arrive at the net current position, shown in the last column. Current liabilities are higher relative to current assets the higher the value of total assets, so that net liquidity falls as total assets rise.

Finally, information on the composition of the portfolios of commercial banks is made available by class of bank for September 1978 (the latest period for which it is available) by the Federal Reserve System. Table 9.17 shows a breakdown of assets and liabilities for banks which are members of the Federal Reserve System and those which are not; member banks are broken down by size, the largest being those in New York City. In general, non-member banks may be regarded as being smaller than member banks, on average. Working down the table from top to bottom as from largest banks to smallest banks, it can be seen that currency holdings increase relatively as size diminishes, as do securities

Table 9.16

Asset Structure of Corporations by Size of Total Assets

U.S.:1975

<u>Total Assets</u> <u>(\$ '000)</u>	<u>Cash</u>	<u>Total Current</u> <u>Assets</u>	<u>Current</u> <u>Liabilities</u>	<u>Net Current</u> <u>Position</u>
		(as % of Total Assets)		
Under 100	15.3	81.6	35.7	+45.9
100 - 249	11.9	52.9	33.1	+19.8
250 - 499	10.5	54.7	34.4	+20.3
500 - 999	9.1	56.8	37.6	+19.2
1,000 - 4,999	7.7	57.6	40.4	+17.2
5,000 - 9,999	7.2	61.8	50.1	+11.7
10,000 - 24,999	7.0	63.3	60.5	+ 2.8
25,000 - 49,999	6.2	55.6	63.4	- 7.8
50,000 - 99,999	5.5	48.6	61.6	-13.0
100,000 - 249,999	5.0	42.4	56.9	-14.5
250,000 or more	6.6	46.4	47.6	- 1.2

Source: U.S.Dept of Treasury, Internal Revenue Service,
Corporation Income Tax Returns, 1975, Table 4.

Table 9.17

Portfolio Structure of Commercial Banks by Class of Bank

U.S.: September 1978¹

	<u>Currency</u>	<u>Federal Fund Holdings</u>	<u>Securities U.S. Govt.</u>	<u>Other</u>	<u>Loans</u>	<u>Deposits</u>	<u>Federal Fund Liabilities²</u>	<u>Loans Deposits</u>
						(as % of total Assets)	(as % of total Liab.)	%
<u>Member Banks</u>								
(New York City	0.5	1.9	6.7	5.5	46.8	67.1	12.4	69.7
Large { City of Chicago	0.4	4.0	9.0	8.9	59.3	66.2	19.9	89.5
(Other	0.9	4.9	8.8	8.4	56.4	75.2	12.4	75.0
All other	0.9	3.0	13.1	13.3	58.1	86.3	4.0	67.3
<u>Non-Member Banks</u>	1.1	3.2	18.6	13.0	59.4	88.2	2.2	67.4

337.

- 1 Latest data for which bank-class portfolio breakdown available
- 2 Includes securities bought and sold under agreements to resell and repurchase, respectively.

Source: Board of Governors of the Federal Reserve System, Federal Reserve Bulletin, September 1980, Table A18.

holdings. Loans constitute a rather similar proportion of the total for all bank classes, except for New York City banks where the proportion is significantly below average.

In turn, a relatively lower proportion of liabilities are deposit liabilities the larger the bank. Since deposits are more liquid than other sources of funds, the relative reliance on deposits in smaller banks justifies in part the 'matching' with relatively liquid assets. All banks both borrow and lend on the federal funds market (the inter-bank market), but the larger banks are larger net borrowers in the market. In a study¹⁷ of use of the federal funds market by small banks, Gambs and Kimball demonstrate that use is highest amongst those small banks with relatively high loan-deposit ratios and those with a high variability of loan-deposit ratios, since loans are the least liquid of bank assets and thus an important indicator of future liquidity needs. The loan deposit ratio (in the last column) is seen to be lower the smaller the size of bank (excluding New York City banks), although the proportion of total liabilities (or assets) devoted to loans if anything is higher the smaller the bank (see column 5), given that the larger banks rely relatively more on non-deposit funds.

The comparison between portfolios of different classes of bank has received much public airing due to the political significance of the unit banking system, which is viewed as a means of promoting regional economic balance. The debate regarding the preferred banking structure centres on two arguments (which were echoed in the multiplier analysis in Chapter 6):

- (a) (in favour of branch banking) small, unit banks do not promote an efficient allocation of resources:

To quote from a Federal Reserve Report in 1975:

'First, because of inability or unwillingness to tap money markets for short-term funds, small banks tend to hold a larger proportion of their assets in liquid form and as a result may be providing less credit to their communities than they otherwise could. Second, if such banks are servicing areas or sectors with an over-all credit deficit, they are frequently unable to obtain outside funds to help close the gap between local supplies of and demand for funds.'¹⁸

- (b) (in favour of unit banking) an 'efficient' allocation of resources would involve net outflows of funds from the areas served by these banks.

Thus, even if the loan-deposit ratio were higher in larger banks or in a branch bank of a similar scale, either the absolute value of loans made available to the area might be smaller than would otherwise have been the case, if the bank's deposit base is reduced, or an increased net outflow might result from an increased purchase of non-loan assets from outside the area, in preference to local securities.

The general tenor of the evidence¹⁹ in a non-spatial framework has supported the view that loan-deposit ratios are indeed higher in branch banks than in unit banks. At the same time, it is argued that if outward flows of funds are higher from branch banks than unit banks, these nevertheless promote allocative efficiency and, where they occur, are evidence of an absence of excess demand in the local area. At the same time,

higher recourse to external liabilities on the part of branch banks means that branch banks do not in general have a higher proportion of total assets devoted to local credit than unit banks; the question of net inflows or outflows must then refer to the relative sizes of borrowed external funds and purchases of outside assets. The provision of credit by local banks need not be of overwhelming importance if in fact there is ready access to funds from financial institutions in other areas. However, the available evidence seems to suggest that employment levels are correlated with loans by local institutions.²⁰

The information in Table 9.17 does not give any indication of bank branching, although the City of Chicago (and the State of Illinois) have the most restrictive branching legislation. It is interesting to note the high loan-deposit ratio (and heavy reliance on federal funds) relative to other bank classes among large Chicago banks. Otherwise the data confirm that two conflicting tendencies apply to relatively small banks: the loan-deposit ratio and the use of federal funds liabilities are both low (confirming point (a) above); but also the purchase of non-U.S. government securities is relatively high for the smaller banks, and to the extent that these include a high proportion of locally-issued securities, the total injection of funds locally could be very large (confirming point (b) above).²¹ Particular attention will be devoted to addressing this issue in presenting the regional data below.

Considering first the information on regional financial flows, a pattern emerges very similar to that for the Canadian

provinces, with federal government flows of funds offsetting quite closely flows of funds associated with commercial and financial transactions. A study²² was carried out for the Federal Reserve System by the Task Force on Interregional Flows of Funds and District Member Bank Reserves, reporting in 1955. (Unfortunately no subsequent studies appear to have emerged with more recent data, but Miller's simulations for the northeast and the rest of the U.S. in the period 1960-1975²³ provide confirmation of the Task Force's results for that later period.) The data are arranged in Table 9.18 with financial flows broken down by Federal Reserve District. Estimates of per capita income in 1955 have been constructed from State data (shown in the first column as a percentage of the national average), and the Districts ordered according to relative per capita income.

Flows corresponding to commercial and financial transactions reflect the regional balance of autonomous private sector payments while Treasury operations measure the net inflow or outflow through the federal government's accounts. The difference between the two is the 'below-the-line' balance, requiring settlement out of currency holdings, Federal Reserve Bank reserves, or borrowing from the Federal Reserve. With the exception of the New York and San Francisco Districts, the pattern is consistently one of private sector deficits for lower-income Districts closely offset by public sector inflows and private sector surpluses for higher-income Districts closely offset by public sector outflows. (The flows are

Table 9.18

Per Capita Income, Treasury Operations and Regional Payments Imbalance

U.S.:1955

<u>Federal Reserve Districts (ordered by 1955 per capita income ranking)</u>	<u>Per Capita Income as % of U.S. Average</u>	<u>Commercial & Financial Transactions Balance (\$mn)</u>	<u>Treasury Operations (\$ mn)</u>	<u>Net Fiscal Incidence Index ¹</u>
6 (Atlanta)	72	-1040	+1019	0.09
5 (Richmond)	83	-1863	+1983	-1.00
11 (Dallas)	88	- 634	+ 591	0.00
10 (Kansas City)	89	-2463	+2449	0.20
9 (Minneapolis)	90	- 270	+ 171	0.67
8 (St Louis)	90	+ 640	- 636	-0.14
4 (Cleveland)	97	+2475	-2500	0.00
3 (Philadelphia)	102	+ 771	- 888	-1.00
1 (Boston)	108	+ 97	- 166	0.17
7 (Chicago)	109	+4790	-4729	-0.57
12 (San Francisco)	115	-2663	+2753	0.22
2 (New York)	122	+ 160	+ 24	-0.50

- 1 Using Catsambas's conclusions as to the net impact of the entire federal budget (1972) on relative per capita income rankings of states, the index value for each District is calculated from the arithmetic average of the values for the relevant states, according to the following:

Deteriorated ranking:	-1
Indeterminate or unchanged:	0
Improved ranking:	1

Sources: U.S. Dept. of Commerce, Statistical Abstract of the United States 1967, Table 465.

N N Bowsher, J D Daane and R Einzig, 'The Flows Between Regions of the United States', Journal of Finance, Vol. 13 (March 1958), pp.1-20

T Catsambas, Regional Impacts of Federal Fiscal Policy (Lexington, Mass.: Lexington Books, 1978), p.101.

absolute levels, so that the large value of the flows for the San Francisco District, for example, is still relatively small in relation to the stock of wealth in that District.)

The close correspondence between the two sets of flows is conventionally used as evidence of the powerful role of the federal government in minimising regional balance of payments problems.²⁴ It is possible that there may be a process of reverse causation, whereby inflows of government funds are subject to very high import leakage rates, i.e. that fiscal redistribution of funds contributes to regional payments imbalance on trade account. Alternatively, inflows of Treasury funds viewed as temporary in nature may be employed to purchase national securities, resulting in an offsetting outflow.

Some indication of the net redistributive effect of the federal budget may be derived from regional fiscal studies. The fiscal incidence index in the last column is constructed from estimates arising from a study by Catsambas.²⁵ On the basis of a variety of expenditure incidence assumptions, Catsambas calculates which states have, overall, benefited in terms of relative per capita income ranking from the total federal budget (in 1972), which have fallen in rank, and which remained unchanged (or for which the outcome was inconclusive, treated here as 'no change'). These three possible outcomes for each state were assigned values of 1, -1 and 0, respectively, and an average value of the 'incidence index' calculated for each Federal Reserve District, shown in the fourth column of Table 9.18.

There seems to be little relationship between per capita income ranking and the redistributive effect of the federal budget, although of course within each District there is a range of per capita incomes by state which may be subject to progressive (or regressive) redistribution as a result of the federal deficit. But Treasury flows include capital flows (bond purchases and sales etc.) as well as current budgetary transactions and Districts with a private sector surplus (deficit) may be expected to buy (sell) government bonds. The strongly redistributive nature of the flows through the Treasury account in the context of an ambiguous degree of redistribution through the budget (admittedly for a different time period) therefore suggests that most federal government easing of payments imbalance occurs through the market in government bonds rather than the current budget.

Relative reliance on liquid assets such as government bonds in order to meet reserves outflows was posited as a feature of banks in lower-income regions. Table 9.19 shows some balance sheet ratios for banks in 1968 classified according to 'peer groups', derived from State data published by the Federal Deposit Insurance Corporation (FDIC). States are grouped together according to the degree of banking concentration, with group 5 having the lowest degree. (The data refer to banks with assets under \$100 million, on the grounds that the peer group of larger banks operates nationwide.) Degree of banking concentration is primarily the result of state legislation. Whether as partial cause or effect of such legislation, per capita income is highest in the grouping with densest

Table 9.19

Asset Structure of Insured Commercial Banks

U.S. 'Peer-Group' Regions¹: End-1978

F.D.I.C. Grouping ¹	Average Per Capita Income	Liquid Assets ²	Loans to Finance Agricultural Production & Commercial & Industrial Loans	Other Loans
	\$		(as % of total assets)	
Group 5	7,504	38.1	22.2	35.3
Group 4	6,569	36.7	15.0	43.9
Group 3	7,839	37.6	21.4	36.3
Group 2	7.238	33.4	14.6	45.2
Group 1	8.257	34.8	13.4	47.3

1. States are grouped into banking 'peer groupings' by the F.D.I.C., in terms of degree of concentration, Group 5 having the lowest degree of concentration. Banks with assets \$100 million and over are excluded.

2. Cash and due from depository institutions, plus public sector securities.

Sources: Federal Deposit Insurance Corporation, Bank Operating Statistics 1978, Peer Groups, Table A

U.S. Department of Commerce, Statistical Abstract of the United States, 1979, Table 730, p.445.

concentration. In general, the predicted pattern emerges in portfolios of banks with more dense financial activity and/or higher incomes. Moving from group 1 to group 5, the proportion of assets held liquid increases, the proportion lent out to finance agricultural or industrial production and commerce rises, and the proportion lent for other purposes falls. The exception is group 4 which has a particularly low per capita income and also a low proportion of 'productive' loans, compared to other loans. This suggests that less banking concentration promotes more lending to support local productive activity, unless actual and expected returns are particularly low.

Information on loan-deposit ratios by region is provided by the U.S. Department of Commerce. Data from this source are set out in Table 9.20, where the regions are ranked by per capita income in the same year, 1978. In the first column, an estimate of the income velocity of circulation of bank deposits is shown for each region. The variance is remarkably wide, and seems to bear no relation whatsoever to relative per capita income. Rather, a relationship seems to exist between velocity and time of settlement and development of financial institutions, with velocity higher the earlier the period of development. The one

Table 9.20

Income:Deposit and Loan:Deposit Ratios and Bank Branching IndexU.S.Census Regions: 1978 IV

Region (Ordered by 1978 per capita income ranking)	Personal Income Deposits %	Total Loans ¹ Deposits %	Branching Index ² 1976
East South Central	2.63	68.1	2.0
West South Central	2.42	65.3	1.8
South Atlantic	3.47	66.6	2.1
Mountain	2.72	70.9	2.0
West North Central	1.98	68.5	1.4
New England	3.79	70.8	2.7
East North Central	2.54	70.9	1.8
Middle Atlantic	1.90	69.8	2.7
Pacific	2.56	75.5	3.0

1 Regional allocation refers to location of banks rather than residence of borrower/lender.

2 Calculated from arithmetic average of state index valued according to the following, with reference to 1976 state legislation:

Branching prohibited :	0
Branching prohibited but limited facilities permitted :	1
Branching permitted within limited geographical areas :	2
No geographic branching restrictions:	3

Sources: U.S.Dept of Commerce, State Quarterly Economic Development (July 1979) and Statistical Abstract of the United States, 1979, Table 730.

R S White, 'The Evolution of State Policies in Multi-office Banking, from the 1930s', in Subcommittee on Financial Institutions of the Committee on Banking, Housing and Urban Affairs, United States Senate, Compendium of Issues Relating to Branching by Financial Institutions, October 1976, pp.43-82.

major exception is the Middle Atlantic region, which includes New York. This may be explained by the dominance of the financial centre in New York (as a generator of deposits) relative to other activities (which generate personal income).

In addition, as pointed out in the Canadian context where a similar absence of relationship was found, there is an identification problem involved in interpreting the demand and supply curves underlying actual money holdings. Relatively low money holdings, for example, on the part of the lower-income regions relative to income (represented by a relatively high velocity measure) can be explained by relatively high demand for money subject to a low supply constraint. Relatively low velocity in the case of expanding, higher-income regions can in turn be explained by an excess supply of money. The more conventional alternative explanation would be that these data reflected an equilibrium position where demand for money relative to income is particularly low in the New England region and high relative to income in the Middle Atlantic region, for example. The import of the rest of the evidence presented in this chapter is however that there is support for the first interpretation provided by data on the composition of financial asset portfolios. This composition is less subject to supply constraints than the level of money holdings, and appears to conform to a negative relationship between preferred liquidity and per capita income.

Higher loan:deposit ratios are associated with higher per capita income. In order to see if there is any relationship between regional variations in loan:deposit ratio and the structure of banking in each region, an index of degree of branching permitted by legislation has been constructed, and set out in column three. The index was constructed from information on state branching legislation, assigning ascending values to the degree of branching permitted, and averaging to arrive at regional values. West North Central region has the lowest incidence of branching (indeed in Illinois no branching is permitted). The loan:deposit ratio is relatively low for this region, as expected for a region where each bank bears a relatively heavy responsibility for meeting reserves withdrawals from its own assets. Nevertheless, the region also has a particularly low velocity (see column one) indicating a relatively high level of deposits.

The evidence for this region thus confirms the hypothesis that independent banks must have relatively liquid portfolios, but nevertheless promote a relatively greater expansion of deposits in the local area. Conversely, the New England, Middle Atlantic and Pacific regions all have liberal branching legislation, relatively high loan:deposit ratios, and relatively high velocity of circulation. (Since, by hypothesis, the lower-income regions are likely to be supply-constrained in money holdings, no inference may be made from the velocity data which result.)

The evidence on differences in rates of return on financial assets in different regions is now considered, since these might be expected to adjust to eliminate any regional excess demand or excess supply of funds. Cebula and Zaharoff produced a study²⁶ of regional interest rate differentials in order to estimate the response of flows of funds to these differentials. Their data base, using interest charges for advances and discounts by Federal Reserve Banks over the period 1950-1971 is set out in columns two and three of Table 9.21. The mean and variance of rates of return over this period are shown for each District, ordered by its 1978 per capita income ranking, and the relative per capita income levels are shown in the first column. While the interest rate differentials appear to be relatively minor, this cannot be taken as indication of relative absence of excess demand for or supply of money in particular Districts. Since the data base referred to Federal Reserve Banks only, a greater degree of interest rate variance is to be expected among all banks of each District. In addition, Cebula and Zaharoff concluded that while, at any one time, most interest rate differentials were statistically insignificant, deposit flows from one District to another were insensitive to such interest rate differentials which existed. The similarity among large banks' rates may then not be due to equalising capital flows. The major exception was the San Francisco District which was able to attract deposits with relatively high interest rates. The last column reproduced the bank branching index from Table 9.20 in terms of Federal

Table 9.21

Relative Per Capita Income, Mean Rate of Return, Credit Risk Index and Bank Branching Index

US Federal Reserve Districts: 1950-1971, 1978, 1976

Federal Reserve District (Ordered by 1978 per capita income ranking)	Per Capita Income as % of National Average 1978	Rate of Return 1950-1971		Business Failures	Bank Branching Index 1976
		Mean (%)	Standard Deviation	New Business Incorporations % 1978	
6 (Atlanta)	87	6.99	0.75	0.7	2.0
8 (St Louis)	94	6.39	0.62	1.5	1.6
5 (Richmond)	94	6.61	0.68	1.1	2.5
4 (Cleveland)	95	6.07	0.65	1.6	1.7
9 (Minneapolis)	97	6.43	0.63	2.4	1.6
10 (Kansas City)	98	6.87	0.64	1.0	0.8
11 (Dallas)	98	7.24	0.65	1.5	1.5
3 (Philadelphia)	100	6.12	0.62	1.2	2.5
1 (Boston)	102	6.40	0.89	1.4	2.7
7 (Chicago)	106	6.16	0.74	1.8	1.9
2 (New York)	108	6.21	0.78	1.4	3.0
12 (San Francisco)	113	7.04	0.91	1.7	3.0

1. Calculated from arithmetic average of state index, valued according to the following values; with reference to 1976 state legislation.

Branching prohibited:	0
Branching prohibited but limited facilities permitted:	1
Branching permitted within limited geographical areas:	2
No geographic branching restrictions:	3

Sources: U S Dept of Commerce, Statistical Abstract of the United States, 1979, Table 730, and State Quarterly Economic Development (July 1979)

R J Cebula and M Zaharoff, 'Interregional Capital Transfers and Interest Rate Differentials: An Empirical Note', Annals of Regional Science, Vol. 8 (Feb. 1974), pp.87-94.

R S White, 'The Evolution of State Policies on Multioffice Banking, From the 1930s', in Subcommittee on Financial Institutions of the Committee on Banking, Housing and Urban Affairs, United States Senate, Compendium of Issues Relating to Branching by Financial Institutions, October 1976, pp.43-82.

Reserve Districts. There is a weak indication that rates of return are higher the higher the degree of branching.

In considering the factors determining interest rate differentials between regions, the indicator of regional risk in the third column of Table 9.21 may be noted. The index is constructed by aggregating State data on numbers of business failures relative to new business incorporations. The index is if anything somewhat higher for higher-income Districts although the tendency is not very marked. The data may understate risk for some Districts by the number of attempts to set up businesses which fail because of unavailability of bank credit. Nevertheless this is the kind of indicator which may be expected to influence bank managers' perceptions of risk when setting a risk premium on loan rates, and it can only be concluded that there are no grounds on the basis of this index for risk premiums to be higher on average in relatively low-income Districts.

A new survey of loan rates conducted by the Federal Reserve System is based on a survey of 340 banks (100 of which are Non-Members) with a wider range of bank size than earlier surveys. The preliminary results of the survey, published in 1977²⁷, are shown in Table 9.22. Loan rates are shown to be consistently higher for smaller loans, for longer maturities, and from smaller banks; the differential is particularly marked for long-term commercial and industrial loans. These relationships are confirmed by earlier studies using the former, more narrowly-based survey.²⁸ These studies all cite the local

Table 9.22

Weighted Average Interest Rate (%) by Size of Loan (\$'000)US: February 1977

		<u>1-9</u>	<u>10-24</u>	<u>25-49</u>	<u>50-99</u>	<u>100-249</u>	<u>250-499</u>	<u>500-599</u>	<u>1000+</u>		
<u>Short-term Commercial and Industrial Loans</u>											
48	Large Banks	..	8.34	..	7.90	7.73	..	7.35	..	7.17	6.49
	Other Banks	..	9.07	..	8.55	8.54	..	7.77	..	7.13	6.76
<u>Long-term Commercial and Industrial Loans</u>											
48	Large Banks	.....	8.82	.....	7.66	.....	7.24	7.00	
	Other Banks	.....	10.15	.....	8.68	.....	7.68	7.29	
<u>Construction and Land Development Loans</u>											
48	Large Banks	..	8.33	..	8.46	8.22	..	8.31	..	7.99	7.53
	Other Banks	..	9.41	..	9.02	8.85	..	8.41	..	8.39	8.13
<u>Loans to Farmers</u>											
48	Large Banks	8.70	8.43	8.33	8.02	7.98	..	8.46	..		
	Other Banks	9.01	8.99	8.66	8.68	8.87	..	8.89	..		

Source: P W Boltz, 'Survey of Terms of Bank Lending: New Series',
Federal Reserve Bulletin, Vol. 63 (May 1977), pp.442-449.

bank concentration ratio as a factor associated with higher loan rates. The Straszheim study²⁹ also suggests a relative absence of large regional interest rate differentials, suggesting high inter-regional capital mobility as the reason. Since his data are taken from the old survey, which covered a smaller number of banks, and primarily larger banks, it is perhaps not surprising that loan rates should be relatively uniform, subject to equalisation by competition among lenders. Table 9.22 indicates, however, that once smaller banks are included (but still not the full range of bank size) the differentials widen, suggesting a significant degree of segmentation in the bank loan market. The consequence must be relatively expensive credit in areas without access to the large banks.

Finally, the evidence gathered in various studies of regional business cycle behaviour has concentrated on the 'real' rather than the financial sector. Thus differential regional responses to interest rate changes during the cycle have been analysed primarily in terms of the elasticity of investment demand of regions with different sectoral compositions with respect to national interest rates, rather than in terms of regional financial variables.³⁰ Some simulation studies have been done including the financial sector,³¹ but no historical work on regions' actual experience. The general consensus emerging from the former studies that poorer regions in general experience a relative decline during business downturns, while attributed to the structure of production, may also in fact be associated

with relative financial stringency. In particular, this observation would be consistent with the hypothesis that poorer regions experience relative unavailability of credit due to rationing during downturns.

Conclusion

The regional data, drawn from both primary and secondary Canadian and U.S. sources, suggest that the temporal financial relationships depicted in Chapter 8 may be carried over into a spatial context. The use of per capita income as a proxy for economic development was qualified by the discussion in Chapter 4. While, over the long-run and over the business cycle, per capita income is a good indicator of economic conditions, it is less reliable in cross-section analysis. The regional relationships cannot therefore be expected to be as clearcut as the temporal relationships. And indeed use of per capita income ranking has had to be qualified in this Chapter particularly with respect to the well-established financial centres in Toronto and New York which have slipped back in the per capita income table in recent years, but which still dominate financial markets; financial development has run ahead of 'real' economic development in these areas.

The information on regional money holdings relative to income produces no clear relationship. This is however not surprising in the context of the analysis in Chapter 7, where it was suggested that the short-run demand and supply curves shift in opposing directions around a relatively level long-run trend. Actual holdings are almost inevitably in disequilibrium given perpetual fluctuations in expectations, with excess demand emerging and

being eroded by income adjustment in declining regions and excess supply emerging and being taken up by income adjustment in expanding regions.

While the evidence on relative values of M/Y also supports the alternative hypothesis of a uniform national demand for money function, the other evidence presented here strongly suggests differences in liquidity preference in the personal, business and banking sectors between low-income and high-income regions. In addition, the structure of the banking sector appears to influence availability of liquidity in each region. The US evidence supports the hypothesis presented in Chapter 6 that independent banks in low income regions tend to have a relatively liquid asset composition, but that the total supply of credit in those regions may nevertheless be relatively high because a relatively high proportion of assets may be made available locally and/or because the total deposit base may be maintained at a relatively high level.

Finally, there appear to be significant interest rate differentials which involve higher borrowing costs for small businesses borrowing small amounts from small banks. This suggests either a consistent expectation of high risk attached to such loans or an absence of capital market integration as far as commercial and industrial borrowers are concerned. In either case, if new small business is perceived as the engine of growth for backward regions, then these credit market conditions must impede the chances of lower-income regions to

catch up with the rest. To the extent that large businesses have direct access to parent company funds and to national credit markets, local credit constraints need not apply. Nevertheless the implications for the economic structure of regions which must rely primarily on the establishment of branch plants of large national (or multinational) companies are significant.

In the next Chapter, the international evidence is investigated to assess the applicability of the hypotheses discussed here to the international context.

Footnotes

1. See M Gaskin, The Scottish Banks: A Modern Survey (London: George Allen and Unwin, 1965), pp.192-200.
2. See E V Morgan, 'Regional Problems and Common Currencies', Lloyds Bank Review, No. 110 (October 1973), pp.19-30.
3. J Short and D J Nicholas, A Study of Money Flows in the Regions of the United Kingdom 1974/75 to 1977/78 (Durham, 1979).
4. See C P Kindleberger, The Formation of Financial Centres: A Study in Comparative Economic History, Princeton Studies in International Finance No. 36 (Princeton: Princeton University Press, 1974).
5. See Statistics Canada, Catalogue 13-547, Table 77.
6. A Guccione and W J Gillen, 'A Metzler-Type Model for the Canadian Regions', Journal of Regional Science, Vol. 14 (Aug. 1974), pp.173-190.
7. F C Miller, 'The Feasibility of Regionally Differentiated Fiscal Policies', University of Guelph Department of Economics Discussion Paper, No. 1979-6 (1979).
8. See Canadian Bankers' Association 'The Banks and the West: Facts, Figures and the Future', C B A Bulletin, Vol. 16 (July 1973), pp.1-16.
9. A similar argument has been applied to the alleged redistribution of funds from the Atlantic provinces to Upper Canada during earlier periods. See T Naylor, The History of Canadian Business 1867-1914: The Banks and Finance Capital, (Toronto: James Lorimer & Co., 1975), Chapter 3.
10. Op.cit.
11. J B Beare, 'A Monetarist Model of Regional Business Cycles', Journal of Regional Science, Vol. 16 (Apr. 1976), pp.57-63

12. J T Sears, Institutional Financing of Small Business in Nova Scotia (Toronto: University of Toronto Press, 1972).
13. See Government of Canada, 'Federal-Provincial Fiscal Arrangements and Established Programs Financing Act', Finance Release 77-22, Ottawa. February 7, 1977. The program has been modified to limit the federal liability in instances of large year-to-year fluctuations in resource revenues accruing to resource rich provinces.
14. For a full discussion of the historical data, see C A Roberts, 'Interregional Per Capita Income Differentials and Convergence: 1880-1950', Journal of Economic History, Vol. 39 (March 1979), pp.101-112 and S P Coelen, 'Regional Income Convergence/Divergence Again ', Journal of Regional Science, Vol. 18 (Dec. 1978), pp.447-457.
15. See L E Browne, 'Narrowing Regional Income Differentials', New England Economic Review, (Sept/Oct 1980), pp.35-56, and 'Narrowing Regional Income Differentials II', New England Economic Review, (Nov/Dec 1980), pp.40-59. Also see Committee on Appropriations, U.S. Senate, Selected Essays on Patterns of Regional Change: The Changes, the Federal Role and the Federal Response, (Washington, DC: U.S. Government Printing Office, 1977).
16. See G Garvy, Debits and Clearing Statistics and Their Use, revised edition (Washington, D.C.: Board of Governors of the Federal Reserve System, 1959), p.42.
17. C M Gambs and D V Kimball, 'Small Banks and the Federal Funds Market', Federal Reserve Bank of Kansas City Economic Review, (Nov. 1979), pp.3-12.
18. Committee on Rural Banking Problems, Board of Governors of the Federal Reserve System, Improved Fund Availability at Rural Banks (Washington, DC: Board of Governors of the Federal Reserve System, 1975), p.1.

19. The most comprehensive collection of evidence is provided by the Subcommittee on Financial Institutions of the Committee on Banking, Housing and Urban Affairs, United States Senate, Compendium of Issues Relating to Branching by Financial Institutions (Washington, D.C., 1976), and in particular the following the contributions: J M Guttentag, 'Branch Banking: A Summary of the Issues and Evidence', ibid., pp.99-112 and G C Fischer and R N Davis, 'The Impact of Multi-Office Banking on the Availability of Credit in Smaller Communities', ibid., pp.155-192.
20. See R G Dreese, 'Banks and Economic Development', Southern Economic Journal, Vol. 40 (Apr. 1974), pp.637-656.
21. A Study by S H Talley, comparing banks acquired by holding companies with similar independent banks indicated a relative rise in the loan:deposit ratio of the former together with a shift away from US government securities in favour of locally-issued securities. Curiously, however, no significant change in profitability was indicated, implying that a change in portfolio composition which would be expected to increase profitability may have been counteracted by a reduction in scale. See S H Talley, 'The Effect of Holding Company Acquisitions on Bank Performance', Board of Governors of the Federal Reserve System, Staff Economic Studies, No. 69, 1971.
22. The Report was published in part as N N Bowsher, J D Daane and R Einzig, 'The Flows of Funds Between Regions of the United States', Journal of Finance, Vol. 13, (March 1958), pp.1-20.
23. See R J Miller, The Regional Impact of Monetary Policy in the United States (Lexington: Lexington Books, 1978), p.100.

24. This case was made also by P C Hartland with reference to an earlier study of flows of funds between Federal Reserve Districts; see P C Hartland, 'Interregional Payments Compared with International Payments', Quarterly Journal of Economics Vol. 63 (1949), pp.392-407.
25. T Catsambas, Regional Impacts of Federal Fiscal Policy, (Lexington, Mass.: Lexington Books, 1978), p.101.
26. R J Cebula and M Zaharoff, 'Interregional Capital Transfers and Interest Rate Differentials: An Empirical Note', Annals of Regional Science Vol. 8 (Feb. 1974), pp.87-94.
27. P W Boltz, 'Survey of Terms of Bank Lending: New Series', Federal Reserve Bulletin, Vol. 63 (May 1977), pp.442-4 55.
28. See A Phillips, 'Evidence on Concentration in Banking Markets and Interest Rates', Federal Reserve Bulletin, Vol. 53 (June 1967), pp.916-926, P Mayer, 'Price Discrimination, Regional Loan Rates and the Structure of the Banking Industry', Journal of Finance, Vol. 22 (Mar. 1967), pp.37-48 and M R Straszheim, 'An Introduction and Overview of Regional Money Capital Markets', in J F Kain and J R Meyer (eds.), Essays in Regional Economics (Cambridge, Mass.: Harvard University Press, 1971), pp.218-239.
29. Ibid.
30. See, for example, H H Fishkind, 'The Regional Impact of Monetary Policy: An Econometric Simulation Study of Indiana 1958-1973', Journal of Regional Science, Vol. 17 (April 1977), pp.77-88, and R F Syron, 'Regional Experience During Business Cycles: Are We Becoming More or Less Alike?' New England Economic Review, (Nov/Dec 1978) pp.25-34.

31. The most thorough simulation model is that in R J Miller,
The Regional Impact of Monetary Policy in the United States
(Lexington, Mass: Lexington Books, 1978).

Introduction

For a variety of reasons, the role of finance in differing degrees of economic development has been documented to a much greater degree for nations than for regions. Much of the evidence presented in this chapter thus derives from existing studies. While the data themselves have been published before in similar form it is worthwhile nevertheless to draw out the important elements from the existing evidence for the particular hypotheses developed here. In particular, differences in the demand for international money between developed and less developed countries, and in the elasticity of supply to those two groups of countries have been discussed widely. Here however the intention is to emphasise the implications of demand differences, and the determinants of those differences, for the elasticity of supply, and vice versa.

When discussing regional data, it was necessary to emphasise the shortcomings of the per capita income measure as a proxy for the wider concept of economic development, as well as for financial development. Comparisons of data referring to different countries must even more be qualified. In general, however, aggregated groupings of developed countries and of low-income developing countries are conventionally associated with the attributes of Central and Peripheral economies, respectively, as described in Chapter 4. Most of the data will therefore refer to countries grouped according to this classification; a general picture

will thus be presented, with the understanding that individual countries within each grouping may not conform exactly to conclusions drawn for 'representative' countries.

Before continuing with international financial data, some discussion is required of the nature of the per capita income disparities between countries. Table 10.1 shows relative per capita GNP in 1960 and 1978, using the World Bank's classification of country groupings. International income disparities are clearly of an order quite different from the regional income disparities quantified in Tables 9.1, 9.3 and 9.12. Not only is the degree of disparity of a far greater magnitude, but also the disparity has been widening over the period 1960-1978. the average annual rate of growth of per capita GNP was similar for centrally planned economies, middle-income countries and the industrialised countries (at 4.0%, 3.7%, and 3.7%, respectively). The capital-surplus oil exporters experienced a massive increase in relative per capita GNP with a growth rate averaging at 7.1% per annum. For the low-income countries, accounting for one-third of the world's population in 1978,¹ the average annual growth rate was only 1.6%. The final column shows the growth of total GNP, differing from the per capita growth rate by the rate of population growth. The low-income countries, by this criterion also, had lower growth rates, although the differential is somewhat less marked. In general, then, there was divergence in terms of per capita income between those countries and the industrialised countries, and also in terms of total income.

Table 10.1

Per Capita GNP as a Proportion of the World Average

Country Groupings: 1960 and 1978

<u>Country Grouping</u>	1960	1978	<u>Average Annual Rate of Growth 1960-78 %</u>	
	<u>%</u>	<u>%</u>	<u>Per Capita GNP</u>	<u>(Total GNP)</u>
Low-income countries	14.5	9.9	1.6	(4.0)
Centrally-planned economies	56.0	59.1	4.0	(5.6)
Middle-income countries	62.6	62.1	3.7	(6.2)
Capital-surplus oil exporters	93.2	165.9	7.1	(10.1)
Industrialized countries	404.0	400.9	3.7	(5.3)

Source: The World Bank, World Development Report, 1980

Table 1, pp.110-111, Table 17, pp.142-143.

In the next section, the international cross-section evidence will be examined with respect to domestic financial portfolios. In the following section, particular attention will be paid to holdings of international reserves, the fulcrum of international money. Finally, international differences in international money supply elasticity will be considered, with particular reference to the three components of supply discussed in Chapter 6: the trade and direct investment balance of the balance of payments, private sector capital flows, and public sector capital flows.

Domestic Portfolio Choice: International Comparisons

In attempting to identify portfolio preferences in economies at different stages of economic and financial development, it is important to isolate indicators of portfolio composition which are least subject to supply constraints. Thus, while the total supply of liquid assets is subject to supply constraints (often as a result of constraints on the supply of the monetary base), the composition of liquid assets is primarily demand determined. For countries, the supply of international reserves (in many cases an important component of the monetary base) is not demand-determined, but the composition of domestic financial portfolios, given the level of reserves, can be taken as a reflection of liquidity preference. There is only a supply constraint in the sense that a given asset (such as demand deposits) supplies relatively more liquidity the more developed the financial system.

Highly aggregated data on portfolio preferences are provided in Table 10.2, for 1978, with the country-groupings corresponding

Table 10.2

Financial Ratios¹Country Groupings:² 1978

	<u>Currency</u> ³ <u>Demand Deposits</u> ⁴ %	<u>Demand Deposits</u> <u>Time & Savings</u> <u>Deposits</u> ⁵ %	<u>Money</u> ⁶ <u>GNP</u> %
Low-income countries	119.2	206.8	19.8
Middle-income countries	113.8	111.4	20.3
Capital surplus oil producers	85.9	191.2	23.1
Industrialized countries	52.7	45.8	22.0

1 Arithmetic averages of the sum of each country's ratios of currency to demand deposits and demand deposits to time and savings deposits. The money-GNP ratio is a weighted average

2 As defined in The World Bank, World Development Report, 1980, excluding those countries for which financial data are not available, primarily in the low-income category, but also all centrally-planned economies, and Iraq and Iran of the capital-surplus oil producers.

3 As defined by the IMF (item 14a in IFS)

4 As defined by the IMF (item 24 in IFS)

5 As defined by the IMF (item 25 in IFS)

6 As defined by the IMF (item 34 in IFS)

Sources: International Monetary Fund, International Financial Statistics (IFS), Vol. 34 (March 1981), country tables
World Bank, World Development Report 1980, Table 1, pp.110-111

to those in Table 10.1, ranked by per capita income. The monetary variables are classified by the IMF definitions. The ratio of currency to demand deposits shows a clear downward trend the higher is per capita income. Demand deposits also fall relative to time and savings deposits as per capita income falls, with the low-income countries' ratio over four times that of the industrialised countries. The capital-surplus oil producers are out of line with a much higher ratio than the middle-income countries. This fact illustrates the proposition that per capita income is not a complete proxy for economic development. The rapid rise in oil revenues has not been accompanied by as rapid an incidence of financial development.² These two indicators of the composition of financial assets, the currency-demand deposit ratio and the demand deposit-time and savings deposit ratio, thus support the hypothesis of lower liquidity preference at higher levels of development.

The third ratio in Table 10.2 lends support to the hypothesis that total money (or indeed any component of broad money) is held as a higher proportion of total income as income increases in the earlier stages of development, and then eventually falls. Alternatively, taking the inverse of this ratio, income velocity of circulation falls as development proceeds and then rises. The ratios are remarkably close, comparing the country-groupings, starting at 19.8% for the low-income group, rising to 23.1% for the capital surplus oil-producers, then falling back to 22.0% for the industrialised countries. The higher level of aggregation

however does disguise a much steeper country-by-country rise in the ratio at low levels of income and fall at high levels. The ratio for Bangladesh, for example, at the bottom end of the income scale is 12.9%, while for the US, towards the other end of the scale, the ratio is 16.5%.

Other, more detailed, studies of international financial portfolios provide further confirmation for these hypotheses. Goldsmith³ documents the evidence of financial development associated with economic development with a combination of time-series and cross-section data referring to a wide range of countries. The measure of financial development introduced by Goldsmith is the Financial Interrelations Ratio (FIR) which can be quantified either as the ratio of total financial assets to GNP (as an indicator of the relative value of total real assets) or as the ratio of net new issues of financial assets (additions to the stock of financial assets) to GNP (additions to the stock of real assets). The FIR is found to be consistently higher for developed countries than for developing countries. Using the financial assets - GNP measure, the FIR of the developed countries increased from 102.5% in 1900 to 155.9% in 1963 (with a dip during the World War II period) while the FIR of the developing countries increased from 24.2% to 65.4% in the same period.⁴ Within each of these categories, lower-income countries in general had lower FIRs.

Early international comparisons of holdings of money, as opposed to total financial assets, reflect the aspect of financial

development which encourages increasing use of money relative to income. In other words, economies had not yet reached the stage of employing financial innovations to conserve money balances to the extent that money balances fall relative to income. Thus Doblin's international comparison⁵ of the income velocity of circulation of money using 1938 data suggests a general downward trend in velocity (upward trend in the ratio of money to income) the higher the per capita income level.

Gurley's later study⁶ however captures the slowing rate at which income velocity falls as per capita income rises. Taking data on currency plus demand deposits relative to income (M/Y) and per capita income (Y/N) averaged over the period 1953-1961 for a cross-section of seventy countries, Gurley estimated the following relationship:⁷

$$M/Y = -6.566 + 4.736 \ln(Y/N)$$

where the coefficient of $\ln(Y/N)$ had a standard error 0.927.

The derivative of (M/Y) with respect to (Y/N) is clearly a declining function of (Y/N), although, according to this estimated relationship, it can never actually become negative.

Gurley also estimated the relationship between the composition of money-assets and per capita income:

$$C/M = 114.305 - 11.381 \ln(Y/N) \\ (7.573) \quad (1.313)$$

where C is currency in circulation and the standard errors for the coefficients are shown in parentheses. Currency thus falls as a proportion of currency plus demand deposits as per capita

income rises, but at a falling rate. Again this confirms the relationship between money-assets suggested in Chapter 5.

Another study covering international data (over a narrower range of countries) for a similar period (1953-1961) was published by Perlman⁸ in 1970, who attempted a more sophisticated econometric estimation of the relationship between money and income, and between money-assets. Perlman attempted to isolate a 'pure' relationship between money holdings and total income levels by introducing conventional variables such as the rate of inflation and government bond yields, as well as a variable representing the degree of urbanisation and dummy variables for regional groupings of countries, to eliminate institutional factors peculiar to those regions. Money, M , is defined as currency plus demand deposits and time and savings deposits. The income elasticity of demand for money relative to income, i.e. of (M/Y) , was estimated to be 0.15, which is again consistent with the hypothesis of an (M/Y) function rising relative to income at a declining rate. It is not surprising, again, that the estimated relationship should not capture an eventual falling trend in (M/Y) at higher income levels, since this did not actually occur in the higher income countries until the 1960s and 1970s.¹⁰

By isolating income as an independent variable from other independent variables in a multivariate regression, Perlman has eliminated fluctuations around the general trend which, in temporal terms, are short-term fluctuations around a long-term trend. Thus, for example, explanatory power is given to government

bond yields and to changes in the price level, which may reflect particular government policies during the estimation period rather than differences in financial structure. However, variables such as degree of urbanisation, as well as the regional dummy variables, represent factors which, in the theoretical analysis conducted in earlier chapters, were already represented by per capita income as a proxy variable. The use of income as a proxy for economic and financial development is justified to a considerable extent by Perlman's estimates of the income elasticity of (M/Y) when only either the government bond yield or the rate of inflation are included as additional explanatory variables. These elasticities are 0.34 and 0.40 respectively,¹¹ i.e. higher elasticities than when the additional explanatory variables are included, although still less than unity.

The 1953-61 period was early enough to pick up the decline in currency holdings relative to income at progressively higher income levels. Thus the income elasticity of the (C/Y) ratio was estimated to be -0.295 when the wide range of additional explanatory variables is included in the regression.¹² In addition, the income elasticity of the currency:deposit ratio is estimated consistently at a negative value close to -0.6 whether or not income is the only explanatory variable included in the estimated equation.¹³ The overall evidence provided by Perlman's study is thus consistent with the cross-section relationships between money variables and income suggested by the theory developed in Chapter 5.

Finally, a study by Park¹⁴ provides an indication of the extent to which liquidity preference (i.e. demand for total money asset holdings) is constrained rather than accommodated by supply. Long-run trends, or broad cross-section relationships, between money holdings and income levels, give an indication of preferences. But short-run fluctuations in (M/Y) , or its inverse, income velocity of circulation, suggest short-run fluctuations in supply. Thus, a reduction in the supply of liquidity is an effective constraint if the result is an increase in velocity; a release of the constraint then allows a return to a lower velocity.

Park found a consistent relationship between fluctuations in velocity and level of per capita income. His results are set out in Table 10.3, in the form of coefficients of variation of velocity.¹⁵ Velocity is measured with respect to three measures of money (currency, currency plus demand deposits, and currency plus demand, time and savings deposits). It is also measured as the ratio of current income to money in the same period (V_1 , V_2 and V_3) and as the ratio of current income to money in the previous period (V_1^* , V_2^* and V_3^*).

If variability of velocity is indeed a good measure of the incidence of supply constraints, then supply constraints are more effective in developing countries than developed countries and in lower-income developed countries than higher-income developed countries. This conclusion is not altered if money holdings are measured relative to current income or anticipated income. Nor is there a very marked difference between the variability of

Table 10.3

Variability of Income Velocity¹ of CirculationCountry-Groupings: 1953-1968

	<u>Coefficients of Variation</u>					
	<u>V₁</u>	<u>V₁[*]</u>	<u>V₂</u>	<u>V₂[*]</u>	<u>V₃</u>	<u>V₃[*]</u>
14 Developing countries	6.0	6.5	6.3	7.2	7.1	6.2
5 Lower-income Developed countries	5.0	4.5	3.7	3.7	6.0	5.4
11 High-income Developed countries	2.9	3.1	3.6	2.9	3.4	3.3

- 1 The subscripts '1', '2' and '3' refer to the money measure for which the coefficient of variation of income velocity is shown: currency, currency plus demand deposits, currency plus demand deposits and time and savings deposits, respectively.

The V_1 , V_2 and V_3 measures refer to a (Y_t/M_t) measure of velocity, while the V_1^* , V_2^* and V_3^* measures refer to a lagged concept of velocity, (Y_t/M_{t-1}) .

Source: Y C Park, 'The Variability of Velocity: An International Comparison', IMF Staff Papers, Vol. 17 (1970), pp.620-637.

income velocity of total money (V_3) and variability of the velocity of component parts (V_1 or V_2). This confirms the validity of the suggestion that the composition of money-assets reflects liquidity preference, but that the total of money-assets and thus the absolute levels of holdings of each money asset may not actually be on the demand curve because of supply constraints.

Demand for International Reserves: International Comparisons

For international transactions, the means of payment takes the form of foreign exchange, gold, SDR, or drawing rights with the IMF. In the international context, then, holdings of these assets constitute the international monetary base in the same way that gold, for example, was once the monetary base of domestic financial systems. The relationship between a country's international reserves and its total domestic money supply can be expected to vary for institutional reasons similar to those accounting for differences between the ratio of total money and monetary base in different countries. These ratios are in general higher the more advanced the financial system, i.e. the greater the degree of confidence in the ability to supply means of payment on demand. It has nevertheless been relatively commonplace for the total value of international reserves to be treated as a causal variable in the context of worldwide monetary expansion and inflation in the 1970s,¹⁶ implying a relatively stable relationship between the sum of reserves and the sum of domestic money supplies.

International reserves data refer to holdings of international money by the authorities, excluding private sector

holdings. The exchange rate regime in operation is clearly an important variable in determining preferences as to the size of holdings, with higher reserves required the more the need to intervene to support a particular exchange rate. The experience of generalised floating since 1973 has confirmed this theory to the extent that reserves needs appeared to fall relative to needs during the crisis period prior to 1973. But reserve holdings relative to imports thereafter rose again,¹⁷ suggesting that governments preferred to have adequate means to stabilize exchange rates. It does not therefore in fact seem appropriate to segregate 'floaters' from 'non-floaters' when comparing international reserves holdings. Whatever the de jure regime, however, developing countries de facto tend to attempt to attain exchange rate stability with respect to a key currency, like the US dollar, to a greater extent than developed countries, because of their greater openness (with prices for domestic goods and factors often denominated in the key currency). Other things being equal, then, a preference for relatively high reserve holdings may be expected for developing countries on account of differences in de facto exchange rate regime.

Table 10.4 shows the relationship between actual reserves holdings by country grouping (according to the World Bank classification) and income, imports and domestic money in 1978. The capital-surplus oil exporters have relatively high reserve holdings with respect to all three measures. This is primarily due to the speed with which reserves have been building up due to oil price increases, relative to adjustment by the countries concerned to these surpluses.

Table 10.4

International Reserve Holdings Relative to GNP and Imports

Country-Groupings¹: 1978

	<u>Reserves</u> GNP	<u>Reserves</u> Imports	<u>Reserves</u> Money ²
	%	%	%
Low-income countries	2.8	29.2	14.1
Middle-income countries	5.8	20.8	28.7
Capital-surplus oil exporters	21.8 ³	65.8	138.7 ³
Industrialized countries	3.3	35.0	14.9

1 Some countries excluded due to lack of available data, primarily in 'low income countries' category (up to one-quarter of total number in category); entire 'centrally-planned economies' category excluded due to lack of data. Country groupings classified as by World Bank.

2 Money as defined by IMF (item 34 in IFS)

3 Inconsistency between columns 1 and 3 and column 3 Table 10.2 due to different coverage of countries because of different availability of money and reserves data.

Sources: The World Bank, World Development Report, 1980, Table 1, pp.110-111, and Table 15, pp.138-139.

The International Monetary Fund, International Financial Statistics (IFS), Vol. 34 (March 1981), pp.10, 37 and 39, and country tables.

While supply of reserves has been high, demand has also been high because of uncertainty about future export earnings, beyond the medium term.

The ratio of reserves to GNP displays a similar pattern to the money:GNP ratio, rising with higher levels of income and then falling in the case of the industrialised countries. The conventional measure of adequacy of these reserves is their value relative to imports. Aside from the capital-surplus oil-exporters, the industrialised countries have the highest reserves-imports ratio because of their lesser degree of openness (when compared with the low-income and middle-income countries). Even with a relatively high ratio of reserves to GNP, the middle-income countries have the lowest degree of import coverage. Finally, the relatively low reserves of the low-income countries and the industrialised countries translate into relatively low ratios of reserves to domestic money.

In order to interpret these data in terms of liquidity preference, some conceptualisation of underlying dynamic processes is necessary. Are reserves higher relative to imports and lower relative to income and money in low-income countries than middle-income countries because of a low-import propensity and a low liquidity preference? Or is the supply of international reserves to low-income countries so low relative to other countries that there is a perpetual shortage of reserves, requiring income adjustment and particularly reduction in imports while the financial system is threatened by an inadequate monetary base? Conversely, is the

evidence for the industrialised countries explained by relatively low preference for international liquidity, coupled with a higher supply schedule?

The evidence provided by the Bank for International Settlements (BIS) data on countries' preferences in the Eurocurrency market lends support to these latter hypotheses; that if low-income countries have relatively low reserves holdings it is more of a supply than a demand phenomenon. Table 10.5 shows the total deposits in the Eurocurrency market for each country-grouping relative to borrowing from the market. As might be expected, the capital-surplus oil exporters are net creditors in the Eurocurrency market, by a factor of over 60% of deposits. Also the middle-income countries are net debtors by a similar factor.

But both the low-income countries and the industrialised countries are net creditors by more moderate factors, 6% and 10% of deposits, respectively. For the low-income countries, the opportunity cost of maintaining a net creditor position must be higher than for any other group of countries, in terms of development potential foregone. Actual reserve holdings are low relative to, say, the middle income countries (see Table 10.4). This evidence on actual portfolios in the Eurocurrency market thus lends strong support to the hypothesis of relatively high liquidity preference in low-income countries frustrated by supply constraints.

Finally, however, before going on to look at data on the supply of liquidity, reference will now be made to empirical studies of reserves holdings. The demand for reserves literature

Table 10.5

Eurocurrency Portfolio Composition

Country Groupings¹: End 1978

	Deposits	Credit	<u>Deposits-Credit</u>
	(\$ mns)	(\$ mns)	(%)
Low-income countries	10,406	9,767	6.1
Middle-income countries	131,740	211,709	-60.7
Capital-surplus oil exporters	57,143	22,087	61.3
Industrialised countries	545,389	491,785	9.8

1 As defined by World Bank, in World Development Report, 1980.

'Capital-surplus oil exporters' however is expanded to include Qatar, United Arab Emirates, Bahrain and Oman, since the BIS provides data for all oil-exporting countries only as a group.

Source: B.I.S., Monetary and Banking Dept., International Banking Developments - first quarter 1979, 21st September 1979, Table 7.

has in general recognised that observed reserves holdings may not actually refer to points on countries' demand curves. Thus, indicators of demand have been used by which to measure whether actual holdings are 'adequate'.

One such criterion is borrowed from domestic monetary theory: Baumol's 'square root law', which implies that demand for money increases proportionate to increases in the square-root of income.¹⁸ Heller¹⁹ argued that commercial banks' foreign exchange holdings were a better measure of transactions balances than central bank reserves. Since the value of imports is the value of foreign exchange purchases to be financed (assuming the capital account, on average, to be in balance), Heller measured the trend in banks' foreign exchange holdings relative to the square-root of imports for an international cross-section over the period 1951-1966. Overall, foreign exchange holdings had increased much faster than the square-root of imports, but this was mainly due to the industrial European and middle-eastern countries in the sample. The ratio fell for all other regions. If the 'square-root law' for the domestic demand for money is employed as an indicator of demand in the international context, then 'adequacy' had improved for the higher-income countries and deteriorated for the lower-income countries. Also, by this criterion, applied to official reserves, column two of Table 10.4 suggests a much lesser degree of adequacy for the low-income and middle-income countries than the industrialised countries.

Following further developments of the square-root principle applied to international money at the theoretical level,²⁰ Officer²¹ conducted a test both with respect to banks' foreign exchange

holdings, and also to official reserves. The import variable was replaced by a variable T, the sum of gross international flows. As a measure of transactions, T understates the actual value since balance of payments items are already highly aggregated. The measures of the elasticity of foreign exchange holdings with respect to T must thus be regarded as overestimates of the actual. Officer finds that, for official reserves, the elasticity is around one-half, as predicted by Baumol's theory, but that, for bank foreign exchange holdings, the elasticity exceeds unity. The conclusion, then, is that official reserves holdings increase at a slower rate than income, but banks' foreign exchange holdings, as Heller had suggested, are relatively high in the high income, high transactions countries. Although Officer, unlike Heller, implies that these holdings are preferred holdings, there is no reason as yet to draw such a conclusion. Indeed, the Eurocurrency portfolio data in Table 10.5 must be borne in mind as evidence that the relatively low reserves holdings of low-income countries are primarily a supply phenomenon since liquidity preference is in fact high.

Most studies of cross-section reserves data attempt to estimate relationships which apply to all countries in the sample. Some of the few studies which test for a difference in structural relationship between developing and developed countries suggest that indeed there are behavioural differences between the two groupings. Clark's²² theory of reserves holdings starts from the position that actual holdings do not constitute desired holdings, but that countries are at any one time on an adjustment path approaching the desired level of reserves. Comparing the estimated

demand for reserves function for developed and developing countries, he concluded that per capita income was not a significant variable for the former, but it was statistically significant for the latter. The per capita income elasticity of reserves holdings (normalised by the value of exports plus imports) for the period 1958-1967 was 0.033 for the developing countries. This implies that reserves, relative to trade, grow only slowly relative to per capita income for developing countries. The demand for reserves equations were however shown by means of a Chow test not to be structurally different for the two groups of countries. What was shown to be different was the equation explaining the relative speed of adjustment towards desired reserves holdings for each grouping. This speed was estimated to be on average 40% greater for the developing countries than the developed countries. This piece of evidence confirms the argument presented in Chapter 7 that financial constraints impose a disproportionate burden of adjustment on the lower-income economies.

The value of Clark's results must nevertheless be qualified to the extent that countries are not in fact on adjustment paths because of frustrating supply responses. The second study considered here which tests for structural differences between the developed and developing countries, conducted by Frenkel,²³ returns to the traditional assumption that observations of reserve holdings are points on the demand curve. The study, using 1963-1967 data for 110 developed countries and 165 developing countries, estimates the import elasticity of reserves holdings to be 0.3 for the former group and 0.7 for the latter group.²⁴ Frenkel interprets this

result as a demonstration of differences in economies of scale in reserves holdings. While Baumol's theory suggested an elasticity of 0.5, the developed countries reap greater economies of scale, and the developing countries lesser economies. Frenkel thus interprets the incidence of similarities in the reserves:imports ratios between the two groups of countries, when they arise (as in 1978; see Table 10.4) as indicating relative reserves shortage for developing countries.

Finally, Frenkel briefly surveys studies which have attempted to incorporate the opportunity cost of holding reserves as an explanatory variable, concluding that no measure of opportunity cost has had any significant explanatory power. Kenen and Yudin,²⁵ for example, echo the assumption made above, in discussing Table 10.4, that the opportunity cost in terms of the return foregone on capital formation is higher the lower the level of per capita income. This variable scarcely added any explanatory power. As such, to the extent that per capita income captures conventional opportunity cost, and actual reserve holdings are not related to opportunity cost, then reserve holdings must measure points off demand curves and/or reflect a liquidity preference which is a function more of uncertainty about future returns than actual rates of return currently available.

Supply of International Reserves

In order to reach any conclusion as to how far actual reserve holdings reflect demand, it is necessary now to consider the nature of the supply functions for countries at different stages of development, both in terms of the position of the supply curve and its elasticity with respect to rates of return.

First, Table 10.6 shows the composition of the balance of payments for each of the World Bank country groupings at the end of 1978. Only the capital-surplus oil exporters have a surplus on merchandise trade (amounting to 22.1% of GNP). The middle income countries have the highest deficit ratio to income at 4.9%. The World Development Report provides data on total fuels imports. These accounted for 11% of low-income country imports in 1978 (or 1.4% of GNP), 17% of middle-income country imports (3.6% of GNP), and 19% of industrialised country imports (3.0% of GNP). Unfortunately, the equivalent data are not available for exports, to allow a breakdown of merchandise trade into fuels trade and non-fuels trade.

For the low income countries, the merchandise trade deficit is compounded by interest payments on external debt and also net deficits on the remainder of the invisible component of the current account, i.e. services plus international transfer, including aid. The middle-income countries have a surplus on the invisibles account. The capital-surplus oil exporters have a large deficit in invisibles, amounting to 8.5% of GNP, so that the current account surplus is reduced to 13.2% of GNP. The industrialised countries in contrast have a surplus on invisibles which is small relative to their GNP, showing that, in broad terms, earnings on services exceed aid transfers.

Because a large component of aid takes the form of interest concessions on loans, it is entered as a reduction in the 'interest on external debt' item. The quantification of aid disbursements and their actual allocation to different components of the balance of payments is an area fraught with difficulty. Indications as

Table 10.6
Composition of Balance of Payments Relative to GNP
Country Groupings¹: 1978

	Balance on Merchandise Trade	Interest on External Debt	Other Invisible	Balance on Current Account	Medium & Long Term Public Sector Loans	Repayment of Principal	Net Direct Private Investment	Residual (inc. Short Term Capital)	Change in Official Reserves
	(all as % of GNP)								
Low-income countries	- 1.3	- 0.6	- 0.1	- 2.0	+ 2.8	- 1.1	+ 0.5	- 2.0	- 1.8
Middle-income countries	- 4.9	- 1.0	+ 2.7	- 3.2	+ 5.6	- 2.0	+ 0.6	- 1.7	- 0.7
Capital-surplus oil exporters	+22.1	- 0.4	- 8.5	+13.2	+ 3.2	- 1.1	+ 0.3	-22.3	- 6.7
Industrialised countries	- 0.5	0	+ 0.9	+ 0.4	+ 0	0	- 0.3	- 0.1	0

1988

¹ As defined by World Bank. Where data not available for particular component for some countries, ratio between item and GNP for other countries in group shown as applying to entire group.

Source: The World Bank, World Development Report, 1980, Tables 1, 8, 13 and 14, pp.110-137.
IMF, International Financial Statistics, Vol. 34 (March 1981), country tables.

to relative magnitudes may, however, be gleaned from data published by the Organisation for Economic Cooperation and Development (OECD) on development assistance distributed by members of the Development Assistance Committee (DAC) and other donors.²⁶

For example, the DAC countries (which correspond to the World Bank category 'industrialised countries' less Ireland), in 1978 collectively allocated 0.12% of GNP to multilateral aid, and 0.23% to bilateral aid of which the grant element was 0.17% of GNP (all in net disbursement terms).²⁷ This compares with an overall surplus of 0.9% in Table 10.6 on the invisible trade account. The OPEC countries allocated a higher proportion of GNP to development assistance, at 1.38% of GNP in 1978, with a proportion (around 80%) grant element similar to that for the DAC countries. This assistance partially accounts for the 8.5% of GNP deficit on 'other invisibles' for the oil exporter countries.²⁸

Total development assistance amounted to \$23,450 bn in 1978,²⁹ or 18.2% of the GNP of all low-income and middle-income countries. Using the OECD definitions of country groupings, the lowest income countries, with 3% of recipients' GNP, received 17.4% of the assistance. All low-income countries, with 17.9% of recipients' GNP, received 57.3% of the assistance, while middle-income countries, with 82.1% of recipients' GNP, received 47.6% of the assistance.³⁰

A major vehicle for development assistance is medium and long-term public (or public sector guaranteed) loans, on which concessional interest rates may be charged. Referring again to Table 10.6, the middle-income countries are the major recipients of public sector loans, at 5.6% of GNP. Even after repayment of principle the net inflow is 3.6% of GNP, compared with 1.7%

for the low-income countries and 2.1% for the capital-surplus oil exporters. This total includes a high proportion of bank lending with government guarantees. The OECD data show that net non-concessional receipts amounted to over 3% of GNP for the middle-income countries, compared with 1.3% for the low-income countries.³¹ As a proportion of industrialised countries' GNP, the outflow of medium and long term loans is under 0.05%. Net direct private investment accounts for an inflow amounting to around 0.5% of GNP for both low-income and middle-income countries, and 0.3% for oil exporters.

The final column in Table 10.6 shows the net change in official reserves in 1978 as a percentage of GNP, showing a small overall deficit for the low-income and middle-income countries, and a loss of reserves for the oil exporters which is large relative to GNP, representing an adjustment from what appears in Table 10.4 to be an excess reserves situation. The industrialised countries increased their reserves, but only by 0.03% of GNP. Total international liquidity, then, fell for most countries in 1978, and by more for the low-income countries than the middle-income countries. The middle-income countries had a larger trade deficit, but were able to offset this with a higher inflow of public sector loans.

International comparisons of balance of payments accounts suffer more than most from statistical problems, so that the balancing item for each group of countries is likely to reflect a variety of anomalies in the data and to be substantial. It is therefore not

possible to impute from the residual term in the second last column in Table 10.6 the exact value of short-term capital flows.

(The problem is flagged by the fact that the item is negative for all groups of countries.) With this major qualification, then, this column suggests relatively large short-term capital outflows for the low-income developing countries. This is confirmed by the earlier observations on the net creditor position of the low-income countries in the Eurocurrency market.

Overall, then, the supply of liquidity to the low-income countries is relatively dependent on public sector sources, and indeed aid contributions are higher, relative to GNP, the lower the income level of the country. It was also noted that the provision of non-concessional finance is relatively greater for the middle-income countries. The relatively lower supply of bank financing to the low-income countries indeed in a sense necessitates the provision of public sector finance. It is however interesting to note that, as far as direct investment is concerned, provision of funds for low-income countries is on a par with middle-income countries, relative to GNP. If there is any interest differential between loans to different types of country, it must reflect default risk rather than different perceptions of rates of return on real investment.

It has been widely noted that the expansion of bank lending to developing countries in the 1970s was concentrated on the higher income developing countries.³² The important question then is how far this reflects relatively low demand for loans among low-income countries and how far it reflects supply constraints either in terms

of the position of the supply curve (measured by above-average interest charges) or in terms of credit ceilings. Rather than being explicit, the credit ceilings may arise from a 'queueing' process.

The expansion of Eurocurrency credits to developing countries as a whole after 1973/74 followed by a relative contraction from 1980 is consistent with the hypothesis that banks have a scale of preferences as to borrowing countries. When demand for credit falls in the developed countries, the excess supply of liquidity is made available first to higher-income developing countries, then to low-income developing countries. The domestic credit squeeze in industrialised countries from 1980 has forced a contraction in the developing country share of the Eurocurrency market. Developing country borrowing, particularly by the low-income countries, may thus be regarded as a residual once developed country credit demand is satisfied at interest rates which closely follow dominant domestic rates (particularly these of the US).

This trend in market share is confirmed by the trend in the interest charges for loans to all developing countries; these charges are made up of the London Inter-Bank Offered Rate (LIBOR) plus a premium, called a 'spread'. The average developing country spread had fallen below 1% by 1979, but in 1980 was up to 1.5 - 2%, with a widening range of spreads for different developing countries.³³

Most work on interest charges for developing countries' bank loans has attempted to measure actual risk, or the objective probability of default, in order to indicate what banks 'ought'

to charge as a risk premium.³⁴ Feder and Just³⁵ have however used actual interest rate data as generated by the World Bank on Eurocurrency borrowing to explain actual interest rate differentials which reflect the subjective probability of default as estimated by lending banks. Interest rates were found to be negatively related to per capita income and projected growth in GDP, and positively related to the ratios of imports to reserves and imports to GNP, the debt-service ratio and export fluctuations. These variables also appear as explanatory variables in studies of 'objective' indicators of risk, although the size of their coefficients in the regression equation may reflect a subjective over- or under-emphasis on particular indicators.

Feder and Just however regard the constant term in the equation for each country as being the primary indicator of the subjective element in the determination of the rate spread for that country. Since the constant term is highly variable as between countries, they conclude that it cannot be explained by general risk evasion on the part of lending banks. Rather it must reflect a combination of country-specific subjective default risk and demand elasticity. The relationship between the constant term and per capita income is not close since its explanatory power has already been captured in the coefficient of per capita income. Nevertheless, the constant term (and thus, other things being equal, interest charges) are generally higher for lower-income countries in the sample, suggesting either that banks add a subjective risk premium for loans to lower-income countries, or that loan demand is relatively interest-inelastic for these countries.

An attempt to estimate the probability that low-income countries are subject to supply constraints in international financial markets has been made by Eaton and Gersowitz³⁶ who attempt to explain bank borrowing by developing countries relative to reserves holdings. Interest charges do not enter into the analysis since they assume that subjective risk evaluation is equivalent to objective risk evaluation and is compensated by a risk premium. Eaton and Gersowitz estimate a demand equation and supply equation for per capita public indebtedness to private creditors for 45 developing countries in 1970 and 1974. (Data for the two years are pooled, with a dummy variable denoting year of observation.) Confirming the hypotheses in Chapters 5 and 6, per capita demand for credit and supply of credit are both positive functions of per capita income. From a multivariate regression, the per capita income elasticity of demand is small at 0.29, while the elasticity of supply is 1.42. This confirms the hypothesis that higher borrowing among higher-income developing countries is due more to differences in supply conditions than demand conditions.

The demand for per capita reserves function also indicates a positive per capita income elasticity at 1.44 (so that the income elasticity of demand for reserves relative to income is 0.44). If however a constraint is postulated on bank borrowing in the form of a credit ceiling, the demand elasticity falls to 1.21. Eaton and Gersowitz suggest that this implies that use of debt and of reserves are substitutes; the opportunity cost of holding reserves rises if bank credit is not available. The estimates of the probability of

credit ceilings having been imposed are then shown to be negative functions of export performance (and thus in general per capita income). This result adds further support to the hypothesis that relatively low borrowing and reserves holding among low-income countries is due more to supply constraints than demand factors (except insofar as the supply constraint on loans reduces demand for reserves).

Conclusion

This chapter has drawn together evidence on domestic and international money holdings for a wide range of countries. In spite of the disparate nature of data sources and the economies they describe, a clear picture emerges of cross-section relationships similar to those between regions and between countries at different times.

The composition of domestic and international financial portfolios was shown to be more liquid at lower levels of per capita income. These data are clear evidence of differences in liquidity preference. The absolute level of domestic or international money holdings is however subject to supply constraints i.e. it represents a point on a supply curve which may differ as between countries, and may not actually be on a demand curve. Absolute levels of liquidity were found not to be high by a variety of criteria for the low-income countries, implying that supply constraints are indeed effective. The relatively low provision of private sector credit available to the low-income countries is offset by a relatively high public sector provision of finance, in the form of aid grants and concessionary terms on loans.

Footnotes

1. See The World Bank, World Development Report, 1980, Table 1, pp.110-111
2. The sample for this country grouping is also very small. There are only five countries in the 'capital-surplus oil producers' category, and financial data are not available for two of these: Iraq and Iran.
3. R W Goldsmith, Financial Structure and Development (New Haven and London: Yale University Press, 1969).
4. Ibid., Table 4-12, p.208
5. E Doblin, 'The Ratio of Income to Money Supply: An International Survey', Review of Economics and Statistics, Vol. 33 (Aug. 1951), pp.201-213.
6. J G Gurley, 'Financial Structures in Developing Economies', in D Krivine (ed.), Fiscal and Monetary Problems in Developing States (New York: Praeger, 1967), pp.99-116.
7. Ibid., p.102
8. M Perlman, 'International Differences in Liquid Asset Portfolios', in D Meiselman (ed.) Varieties of Monetary Experience (Chicago: University of Chicago Press, 1970), pp.297-337
9. Ibid., p.323.
10. See Tables 8.1 and 8.2, which show a falling (M/Y) ratio for the US and the UK since the 1960s.
11. Perlman, op.cit., Table 2, p.315.
12. Ibid., p.322
13. Ibid., pp.326-327.
14. Y C Park, 'The Variability of Velocity: An International Comparison', IMF Staff Papers, Vol. 17 (Nov. 1970), pp.620-637.
15. Ibid., pp.629 and 634.

16. See, for example, H R Heller, 'International Reserves, Money and Global Inflation', Finance and Development, Vol. 13 (March 1976) pp.28-30, W M Corden, Inflation, Exchange Rates and the World Economy (Oxford: Clarendon Press, 1977), pp.124-130, D I Fand, 'World Reserves and World Inflation', Banca Nazionale del Lavoro Quarterly Review, No. 115 (Dec., 1975), pp.347-369 and W H L Day and H R Heller, 'The World Money Supply: Concept and Measurement', Weltwirtschaftliches Archiv, Vol. 113 (1977), pp.693-718.
17. See H R Heller and M S Khan, 'The Demand for International Reserves under Fixed and Floating Exchange Rates', IMF Staff Papers Vol. 25 (Dec. 1978), pp.623-649.
18. W J Baumol, 'The Transactions Demand for Cash: An Inventory Theoretic Approach', Quarterly Journal of Economics, Vol. 66 (Nov., 1952) pp.545-556.
19. H R Heller, 'The Transactions Demand for International Means of Payment', Journal of Political Economy, Vol. 76 (Jan./Feb. 1968), pp.141-145.
20. See J H G Olivera, 'The Square-Root Law of Precautionary Reserves', Journal of Political Economy, Vol. 79 (Sept./Oct. 1971), pp.1095-1104 and E Baltensperger, 'The Precautionary Demand for Reserves', American Economic Review, Vol. 64 (March 1974), pp.205-210.
21. L H Officer, 'The Demand for International Liquidity: A Test of the Square-Root Law', Journal of Money, Credit and Banking, Vol. 8 (Aug., 1976), pp.325-327.
22. P B Clark, 'Demand for International Reserves: A Cross-Country Analysis', Canadian Journal of Economics, Vol. 3 (Nov. 1970), pp.577-594.

23. J A Frenkel, 'The Demand for International Reserves by Developed and Less-Developed Countries ', Economica, Vol. 41 (Feb . 1974) pp.14-24.
24. Ibid., p.18
25. P B Kenen and E B Yudin, 'The Demand for International Reserves', Review of Economics and Statistics, Vol. 47 (1965), pp.242-250.
26. OECD, Development Co-operation: Efforts and Policies of the Members of the Development Assistance Committee, 1980 Review.
27. Ibid., Table V-3, p.102.
28. Ibid., Tables VII-3 and VII-4, p.127.
29. Ibid., Table IV-10, p.88
30. Ibid., Table IV-10, p.88
31. Ibid., Table IX-1, p.154
32. See, for example, D C Beek, 'Commercial Bank Lending to the Developing Countries', Federal Reserve Bank of New York Quarterly Bulletin, Vol. 2 (Summer 1977), pp.1-8, N Sargen, 'Commercial Bank Lending to Developing Countries', Federal Reserve Bank of San Francisco Economic Review, Spring 1976, pp.20-31 and OECD, op.cit. pp.159-162.
33. OECD, op.cit., p.160.
34. See, for example, N Sargen, 'Economic Indicators and Country Risk Appraisal', Federal Reserve Bank of San Francisco Economic Review (Fall 1977), pp.19-35.
35. G Feder and R E Just, 'An Analysis of Credit Terms in the Eurodollar Market', European Economic Review Vol. 9 (May 1977), pp.221-243.
36. J Eaton and M Gersowitz, 'LDC Participation in International Financial Markets: Debt and Reserves', Journal of Development Economics, Vol. 7 (Mar. 1980), pp.3-21.

Introduction

The hypothesis investigated here was that, where real economic disparities exist between regions and nations, money and financial institutions may on balance tend to increase those disparities. The basic principles underlying monetarist representations of the economy were found to be unsuited to the analysis of real disparities which did not necessarily converge, although bearing the implication that the hypothesis could not be supported. A theory was then constructed along Keynesian lines, which would support the hypothesis, although employing some tools and concepts more commonly associated with monetarism: money multipliers and the monetary implications of the balance of payments, in particular. The evidence examined was found to be consistent with the theory which had been developed, and thus to lend support to the hypothesis.

The purpose of this final chapter is to summarise the detail of the earlier chapters, in the next section, and then to examine the implications of the conclusions reached, first for the policy questions discussed in Chapter 2 in the third section, and then in more general terms in the last section.

Summary of Contents

It is one of the fundamental conclusions of Keynesian monetary theory that money is non-neutral, i.e. that changes in monetary variables can (and normally do) affect real variables in the short run and (according to some interpretations) in the long run. This

non-neutrality arises from money's role as a vehicle for delaying decisions on expenditure, particularly expenditure on financial assets whose expected capital value carries a risk of capital loss. An increased expectation of capital loss (or uncertainty surrounding expectations) tends to increase liquidity preference. For institutional reasons it also tends to reduce the overall supply of liquidity. Upward pressure is thus put on interest rates and money balances are diverted from financing real expenditure. The effect on real expenditure occurs no matter how well-founded the initial shift in expectations.

In applying this argument to a collection of spatial entities, rather than one nation state, the Keynesian non-neutrality can be interpreted in another dimension. In addition, the introduction of financial interrelationships between economies adds force to the mechanisms outlined above for individual economies. The range of relevant assets is widened to include those of several economies. As a consequence, the shift in the supply of money to any one economy, when expectations change with respect to that economy's asset prices, is reinforced by inflows or outflows of capital.

The demand for money and its supply in the long run are determined by an economy's financial structure, by its stage of financial development relative to other economies. While transactions needs increase relative to income at lower levels of development, as the economy diversifies and specialises in production, they are reduced at later stages of development as financial innovations allow more efficient use of money balances. The capacity to supply money increases with financial development. Periodic constraints on money supply growth, such as static levels

of gold production, are the spur for innovations in commercial banking and central banking which result in substitute forms of money. Other things being equal, a given injection of high-powered money generates more money (in, say, the M_3 , sense) in financially more developed countries.

In the short-run, however, there will be deviations from this long-run pattern as a result of shifting expectations. An increase in the expected value of an economy's assets, relative to other economy's assets, encourages a reduction in holdings of idle balances as residents acquire non-money assets in an attempt to reap capital gains. At the same time, inflows of capital from other economies increase the domestic money supply, as residents of other economies attempt also to reap capital gains. The supply of money is further increased as, in a rising market, more and more assets become 'money-like'. A reduction in the demand for money has thus been met by an increase in its supply.

Similarly, an increase in the demand for money occurs in an economy expecting a reduction in the value of its assets. Less finance is thus made available for real expenditure, but in addition the total available finance falls. The most money-like assets, available to residents of declining economies, are often the liabilities of institutions of other economies. Thus, not only does capital flow out to purchase non-money assets in other economies, but also to purchase money-assets. Further, the liquidity of domestic non-money assets falls in a declining market. An increase in the demand for money has thus been met by a reduction in its supply.

It is these conflicting trends in money markets which help to drive the expansions and contractions of conventional business cycles.

They can also be seen to play a part in maintaining and possibly exaggerating existing real economic disparities between economies. An excess supply of money in a rising market promotes upward income adjustment while an excess demand in a falling market promotes downward income adjustment.

In the case of the business cycle, expansions reach a peak and contractions reach a trough. Actual interest rates may be less than expected rates of return in financial markets in a boom period. But if they are greater than expected real rates of return to physical investment, then the consequent deceleration process eventually forces a modification of expectations as to financial asset prices, and thus financial markets also pass their peak. The reverse process occurs in the downturn as the real investment turnaround generates the financial investment turnaround to finance it.

It is not necessarily the case that this dampening process carries over to the spatial context, in the sense that trends in expected asset prices are more or less regularly reversed. Indeed it was seen that differentials in growth rates can persist over protracted periods. The two main stabilising forces in the spatial context (as opposed to the temporal context) are what Myrdal termed 'spread effects', on the one hand, and the role of the public sector, on the other.

The spread effects are contrasted with the 'backwash effects' (using Myrdal's terminology) alluded to above. Relative expansion in one economy attracts real and financial resources from other economies, feeding the expansion: these are the backwash effects, retarding expansion in the other economies. But the expansion in the

first economy also spreads to the other economies by raising demand for their exports and also by generating a larger overall pool of credit from which capital may return to the other economies.

The strength of these spread effects depends on the income elasticity of demand for exports of the non-expansionary economies, and also on the propensity for the expanding economies' financial institutions to return capital to the other economies in the form of credit, or security purchases. While this propensity may be greater among regions (particularly developed country regions) than among nations, it may also be expected that the propensity for capital outflow from stagnating regions to expanding regions may have been greater in the first place than between stagnating and expanding countries, i.e. capital mobility increases the potential strength of backwash effects as well as spread effects.

While the greater strength of spread effects than backwash effects may provide some explanation for declining per capita income differentials among developed country regions but expanding differentials among nations, the more important factor appears to be the actions of the public sector. The level of government assistance to declining economies is high relative to income within developed economies, compared with development assistance to low-income developing countries (except the very lowest income countries).

But a crucial additional government role, without which the benefit of transfers of funds is limited, is in generating expectations as to an economy's asset prices. In most developed countries there has developed a tradition of government intervention to provide some minimum level of income and provision of services.

In many cases, this policy is reinforced by an explicit regional policy, addressed at particular areas of low income and employment. As long as there is a deep-seated confidence that the government will intervene to support regions experiencing particular difficulties, then a lower limit is placed on realistic pessimistic expectations. This situation may be contrasted with that of low-income developing countries, to whom the international commitment to enforcing a minimum living standard is held with rather less confidence. Assistance often is available only after the fulfilment of pessimistic expectations. Also, assistance may be conditional on downward income adjustment. (Although, if this adjustment is expected to be successful in relieving the country concerned of its payments problems, then the downward drift of expectations may thereby be curtailed.)

Policy Implications

The particular interpretation of the role of finance in maintaining or promoting economic disparities suggests a variety of implications for government policy. First, the effectiveness of government assistance to declining regions or nations is not necessarily reflected in the absolute amounts of assistance. If expectations as to local asset prices remain pessimistic in spite of the assistance, the amounts transferred will tend to return in payment for imports or as capital flows. This is not to deny the income transfer inherent in a grant or subsidised interest rate. Rather, if the set of local expectations is such as to generate high liquidity preference and large capital outflows, an inflow of

money is unlikely to reverse the trend. Such a reversal is necessary if local private sector investment expenditure is to increase.

Second, the real distributional effects of particular distributions of additions to the money supply, such as S.D.R., will also not necessarily coincide with the relative nominal amounts. At any one time, different countries are in states of excess demand for, or excess supply of, money, states which may have persisted for some time. The net use of S.D.R. by developing countries has conventionally been extrapolated to imply increased relative use with increased relative allocations, i.e. that an S.D.R./Aid Link would bring about increased total expenditure. But such a Link, together with the international political commitment to assist developing countries which its introduction would require, could change financial behaviour. By generating greater confidence in the viability of the recipient economies, the Link might so improve the net positions on their capital accounts that net use of S.D.R. might even fall. In addition, to the extent that a greater proportion of the international monetary base was held in countries at low levels of financial development (with low money multipliers) the lower would be the rate of increase in the world money supply.

Third, it has been suggested that national monetary policy has differential effects on different regional economies, as does the monetary policy of the financially developed countries on other economies. These effects extend beyond the conventional differential interest elasticities of expenditure in different economies. If the state of expectations differs as between economies, then a tight monetary policy will have most impact on the economies with pessimistic expectations - although tight monetary

policy is normally employed to dampen an expansion that is judged to be too buoyant. Further, changes in the money supply will have different regional effects depending on where and how they are effected. The beneficial income multiplier effects of government expenditure in a depressed region will be enhanced if the expenditure is financed by money creation, lodged with local financial institutions.

Perhaps the most significant conclusion in this context is that the regional composition of monetary policy and its effects on expenditure determine the national aggregate effect of the policy. In particular, by directing money supply changes towards high demand for money, low money multiplier economies, the authorities can reduce the size of the national money multiplier. During a period of stagflation, the government could actually improve the inflation-unemployment trade-off by an active regional policy: using government capital expenditure to halt the decline of the regions with lowest activity, financed by money creation which could have a smaller effect on the money supply than if injected elsewhere in the financial system.

Fourth, implications may be drawn for the design of financial systems. The trend has generally been for financial systems to become progressively more integrated, with a view to encouraging greater capital mobility. This trend is apparent both within nations and between nations. It is being actively promoted within the E.E.C. as a means of promoting economic union. The benefits of such capital mobility are seen primarily as those of an improved allocation of resources.

The case has been made here, however, that there may be serious implications for particular economies of improved capital mobility. Given the initial disparities in financial efficiency and expected rates of return between different economies, an increase in capital mobility can be expected initially to encourage increased net capital outflows from the less financially efficient economies with lower expected rates of return. Nor need this tendency necessarily be reversed beyond the short-run. The greater the capital outflows from these economies, the greater will be the excess demand for money, and the less will be the demand for real assets (existing or acquired) in those economies. The lower the rate of real investment and the higher the cost of credit, the more likely it is that marginal real rates of return, net of financing costs, will be relatively low. The low availability of credit and pessimistic expectations will thereby have been justified by events.

The stabilising forces outlined above (spread effects and the public sector) would normally stabilise this chain of events so that the region's relative decline would not necessarily continue indefinitely and could indeed be reversed. Nevertheless, there would seem to be a trade-off between the global benefits of increased capital mobility, and the costs for particular economies. In some cases, increased segmentation of financial markets might be preferred, on the grounds of promoting a more balanced distribution of economic growth.

Conclusion

The primary purpose here has not been to make particular policy prescriptions. Rather, the main aim has been to construct a theory which supports the hypothesis of an independent role for finance in influencing economic disparities, and is consistent with the evidence. The major conclusion, if this theory does indeed reflect reality, is therefore that discussion of the various theoretical and policy issues touched on here should be modified to reflect the influence of money and financial markets. Starting from a Keynesian standpoint that money is non-neutral, this non-neutrality has been shown to have a spatial dimension.

As a postscript, it is perhaps germane to note that a recent publication of papers on economic disparities (regional and international)¹ is described by the editors are:

'probably one of the best and certainly one of the most complete collections of essays devoted to this very important problem [the inequality of economic growth].'²

Yet money is treated only as a peripheral factor in the process in some papers, and not at all in most. This highlights the degree to which existing theory requires modification if money's role is to be given its due recognition. The major conclusion arrived at here is that a theoretical framework which adequately describes a world of economic disparities should incorporate money as an important variable.

Footnotes

1. P Bairoch and M Lévy-Leboyer (eds.), Disparities in Economic Development since the Industrial Revolution (London: Macmillan, 1981).
2. Ibid., Preface.

Conventional money multipliers measure the relationship between monetary aggregates and some monetary base. They are definitional on the assumption that all financial institutions concerned can and do expand their assets to the extent allowed by their reserves constraint. In other words there is an excess demand for loans at current interest rates. It is assumed that leakages between groups of institutions whose liabilities make up the monetary aggregates occur according to stable ratios, as do leakages outside these institutions.

The simple M_1 multiplier, m_1 , measures the volume of demand deposits plus currency generated by an injection ΔH of high-powered money into the banking system as a whole:

$$m_1 = \frac{\Delta M_1}{\Delta H} = \frac{1+c}{r+c} \quad (A1.1)$$

where c is the cash-demand deposit ratio and r the reserve-demand deposit ratio. The multiplier is greater the lower the reserve requirement and the lower the cash-deposit ratio.

The reserve requirement reflects liquidity preference (possibly externally imposed) on the part of the banks while the cash-deposit ratio reflects liquidity preference on the part of the non-bank public. The money multiplier would then be higher the lower the degree of liquidity preference; in general it would be higher in Centre than in Periphery.

But the simple multiplier can only apply to a closed banking system. Any inflow or outflow of high-powered money between the two economies would have to be treated individually as a multiplicand.

However, these inflows and outflows can be expected to conform to a more or less regular pattern, which could be treated in a way similar to the regular leakages into reserves and currency. The multiplier formula will thus now be adapted to incorporate inter-economy flows of funds, in a two-economy system.

Suppose deposits in Centre and Periphery, D_c and D_p , have a velocity of circulation of k_c and k_p respectively. Further suppose that non-bank inter-economy flows occur as a stable proportion, a_{cp} and a_{pc} respectively, of transactions, i.e. $a_{cp} k_c D_c$ and $a_{pc} k_p D_p$, respectively. Taking the two regions together, the overall national money multiplier, m_n , is determined by two equilibrium conditions:

- a) the additions to both regions' reserves and currency should use up the addition to high-powered money and satisfy the preferred ratios, r_c , r_p , c_c and c_p , respectively:

$$(r_c + c_c) \Delta D_c + (r_p + c_p) \Delta D_p = \Delta H \quad (A1.2)$$

- b) net inter-economy flows should be zero:

$$a_{cp} k_c (D_c + \Delta D_c) = a_{pc} k_p (D_p + \Delta D_p) \quad (A1.3)$$

The multiplier satisfying these conditions is:

$$m_n = \frac{(1+c_c) a_{pc} k_p + (1+c_p) a_{cp} k_c}{(r_c + c_c) a_{pc} k_p + (r_p + c_p) a_{cp} k_c} \quad (A1.4)$$

The regional components of the national money supply increase by multiples, m_c and m_p , of ΔH , where:

$$m_c = \frac{(1+c_c)a_{pc}k_p}{(r_c+c_c)a_{pc}k_p + (r_p+c_p)a_{cp}k_c} \quad (A1.5)$$

$$m_p = \frac{(1+c_p)a_{cp}k_c}{(r_c+c_c)a_{pc}k_p + (r_p+c_p)a_{cp}k_c} \quad (A1.6).$$

These multipliers have two main notable features. First, the national multiplier is the same regardless of the region in which the initial injection of high-powered money occurs. This is a direct result of condition (A1.3), which ensures that the high-powered money is redistributed by inter-economy flows until net flows are eliminated. Nevertheless, the scale of the national and regional multipliers is determined by the leakage coefficients.

Second, the multipliers make no reference to bank portfolio decisions other than the reserve ratio and any regular inter-economy capital flows incorporated in a_{pc} and a_{cp} . In equilibrium, deposit levels do not change, so that the decision as to the allocation of additional assets is irrelevant.

If, however, the strong assumption of stable leakage coefficients is relaxed, then both the location of the injection and bank lending behaviour can alter both the regional and national multipliers. In particular, if the injection occurred in Periphery, say, financing a public sector capital project which increased local employment, then expectations as to the value of Periphery assets could improve, reducing liquidity preference. If, as a result, Periphery banks allocated more assets to local loans and advances, optimistic expectations could be reinforced.

The end-result could be a lower cash-deposit ratio, c_p , lower excess reserves holdings by the banks, r_p , and a lower rate of capital outflow included in a_{pc} .

The first two factors would tend to increase the national money multiplier, but the lower rate of leakage from Periphery to Centre would in fact reduce the national multiplier. This result is due to condition (A1.3); the deposit growth must be relatively greater in Periphery in order to equate the absolute level of inter-economy leakages. But if the cash and reserves leakages from Periphery are still higher than in Centre, the national multiplier is thereby reduced. The multiplier m_n is higher the more deposit growth is concentrated in the low cash and reserves leakage region.

In practice, the multiplier formulae are misleading in that economies are unlikely to remain on the path to final equilibrium, but rather be continually shifted from one path to another as successive high-powered money injections occur. According to this view, it becomes important which particular path to equilibrium is followed; in particular bank portfolio behaviour becomes significant as a determinant of that path. Tables 6.1 to 6.7 show how the loan and deposit totals in each economy can vary during the multiplier process under different assumptions as to portfolio behaviour.

The dynamic process by which the money multiplier works itself out in Tables 6.1 to 6.7 can be expressed mathematically as follows:

$$D_{c_t}^c - D_{c_{t-1}}^c = (L_{c_t}^c - L_{c_{t-1}}^c) + (L_{p_t}^c - L_{p_{t-1}}^c) + (R_{c_t}^c - R_{c_{t-1}}^c) - (D_{p_t}^c - D_{p_{t-1}}^c) \quad (A1.7)$$

$$L_{c_t}^c - L_{c_{t-1}}^c = \beta_c E_{c_{t-1}}^c \quad (A1.8)$$

$$L_{p_t}^c - L_{p_{t-1}}^c = (1 - \beta_c) E_{c_{t-1}}^c \quad (A1.9)$$

$$E_{c_t}^c = R_{c_t}^c - r_c (D_{c_t}^c + D_{p_t}^c) \quad (A1.10)$$

$$R_{c_t}^c - R_{c_{t-1}}^c = (A_{p_{t-1}}^c - A_{c_{t-1}}^c) - c_c (D_{c_{t-1}}^c - D_{c_{t-2}}^c) + (D_{p_t}^c - D_{p_{t-1}}^c) \quad (A1.11)$$

$$D_{p_t}^c - D_{p_{t-1}}^c = \alpha_p (R_{p_t}^c - R_{p_{t-1}}^c) \quad (A1.12)$$

$$R_{p_t}^c - R_{p_{t-1}}^c = (A_{c_{t-1}}^c - A_{p_{t-1}}^c) - c_p (D_{p_{t-1}}^c - D_{p_{t-2}}^c) \quad (A1.13)$$

$$A_{c_t}^c = a_{cp} k_c D_{c_t}^c + (L_{p_t}^c - L_{p_{t-1}}^c) \quad (A1.14)$$

$$A_{p_t}^c = a_{pc} k_p D_{p_t}^c + (S_{c_t}^p - S_{c_{t-1}}^p) \quad (A1.15)$$

$$D_{p_t}^p - D_{p_{t-1}}^p = (L_{p_t}^p - L_{p_{t-1}}^p) + (R_{p_t}^c - R_{p_{t-1}}^c) \quad (A1.16)$$

$$L_{p_t}^p - L_{p_{t-1}}^p = \beta_p E_{p_{t-1}}^p \quad (A1.17)$$

$$S_{c_t}^p - S_{c_{t-1}}^p = (1 - \beta_p) E_{p_{t-1}}^p \quad (A1.18)$$

$$E_{p_t}^p = R_{p_t}^p - r_p D_{p_t}^p \quad (A1.19)$$

where $D_{i_t}^i$ = Non-bank deposits in region i, period t

$D_{i_t}^j$ = Deposits by bank in region i with bank in region j,
period t

$L_{i_t}^j$ = Loans (advances) made by bank in region j to residents
of region i, period t.

R_{i_t} = Reserves of bank in region i, period t

E_{i_t} = Excess reserves of bank in region i, period t

- A_{i_t} = Trade and non-bank capital outflows from region i
to region j, period t
 $S_{i_t}^j$ = marketable securities issued in region i purchased by
bank in region j, period t
 α_i = proportion of reserves of bank in region i held
with bank in region j
 β_i = proportion of non-reserve assets of bank in region i
allocated to local loans/advances
 c_i = cash deposit ratio in region i
 r_i = reserve ratio in region i
 $a_{ij}^{k_i}$ = proportion of deposits in region i flowing out to
region j per region

All numbers are rounded to the nearest 0.5. The parameter values which distinguish the cases exemplified by Tables 6.1 to 6.7 are as follows (where ΔH_i is the injection of high powered money into the bank in region i):

Table Number	ΔH_c	β_c	c_c	r_c	$a_{cp}^{k_c}$	ΔH_p	α_p	β_p	c_p	r_p	$a_{pc}^{k_p}$
6.1	10	2/3	1/20	1/10	1/5	10	1	1/2	1/10	1/5	2/5
6.2	10	2/3	1/20	1/10	1/5	10	1	1/4	1/10	1/5	2/5
6.3	10	1/2	1/20	1/10	1/5	10	1	1/2	1/10	1/5	2/5
6.4	10	2/3	1/20	1/10	1/5	10	1	1/4	1/10	1/5	1/2
6.5	0	2/3 → 1/2	1/20	1/10	1/5	20	1	1/2 → 2/3	1/10	1/5	2/5
6.6	0	2/3	1/20	1/10	1/5	20	1	1/2	1/10	1/5	2/5
6.7	10	2/3	1/20	1/10	1/5	10	0	1/2	1/10	1/5	2/5

Appendix 2 MONEY MULTIPLIERS COMBINED WITH INCOME SUPERMULTIPLIERS
FOR ECONOMIES WITH DIFFERING ECONOMIC CONDITIONS

The particular model of the real sector employed in
Tables 7.1 to 7.3 is as follows:

$$Y_{i_t} = C_{i_t} + I_{i_t}^A + G_{i_t} + X_{i_t} - M_{i_t}, \quad i = c, p \quad (A2.1)$$

$$C_{i_t} = 0.7Y_{i_{t-1}} \quad i = c, p \quad (A2.2)$$

$$I_{c_t}^P = I_{c_0} + (Y_{c_{t-1}} - Y_{c_{t-2}}), \quad t > 2 \quad (A2.3)$$

$$I_{c_t}^A = \text{the smaller of} \begin{cases} I_{c_t}^P + \sum_{r=3}^{t-1} (I_{c_r}^P - I_{c_r}^A) \\ L_{c_t}^C + (S_{p_{t-1}} - S_{p_{t-2}}) + \sum_{r=3}^{t-2} (S_{p_r} + L_{c_r}^C - I_{c_r}^A) \end{cases} \quad (A2.4)$$

$$I_{p_t}^P = I_{p_0} + (Y_{p_{t-1}} - Y_{p_{t-2}}) \quad t > 2 \quad (A2.5)$$

$$I_{p_t}^A = \text{the smaller of} \begin{cases} I_{p_t}^P + \sum_{r=3}^{t-1} (I_{p_r}^P - I_{p_r}^A) \\ (L_{p_t}^C + L_{p_t}^P) \end{cases} \quad (A2.6)$$

$$G_{i_t} = 0.1Y_{i_0} + H_{i_t}, \quad i=c, p \quad (A2.7)$$

$$X_{i_t} = M_{j_t} \quad i, j=c, p \quad (A2.8)$$

$$M_{c_t} = 0.1Y_{c_{t-1}} \quad (A2.9)$$

$$M_{p_t} = 0.2Y_{p_{t-1}} \quad (A2.10)$$

where

- Y_{i_t} = income in economy i, period t
 C_{i_t} = consumption in economy i, period t
 $I_{i_t}^A$ = actual investment in economy i, period t
 $I_{i_t}^P$ = planned investment in economy i, period t
 G_{i_t} = government expenditure i economy, period t
 X_{i_t} = exports from economy i, period t
 M_{i_t} = imports to economy i, period t
 H_{i_t} = money-financed addition to government spending
in economy i, period t
 $L_{i_t}^j$ = loans/advances by bank in economy j to residents
of economy i, period t
 $S_{c_t}^P$ = purchase of Centre marketable securities by Periphery
bank, period t.

The financial variables, $L_{i_t}^j$ and $S_{c_t}^P$, are generated from the following model, which is a modified version of that set out in Appendix 1. The variables are defined as in Appendix 1.

$$D_{c_t}^c - D_{c_{t-1}}^c = (L_{c_t}^c - L_{c_{t-1}}^c) + (L_{p_t}^c - L_{p_{t-1}}^c) + (A_{p_{t-1}}^c - A_{c_{t-1}}^c) \quad (A2.11)$$

$$L_{c_t}^c - L_{c_{t-1}}^c = \text{the smaller of } \begin{bmatrix} I_{c_t}^A - I_{c_{t-1}}^A \\ E_{c_{t-1}} \end{bmatrix} \quad (A2.12)$$

$$L_{c_t}^P - L_{c_{t-1}}^P = E_{c_{t-1}} - (I_{c_t}^A - I_{c_{t-1}}^A) \text{ subject to maximum } \frac{1}{3} E_{c_{t-1}} \quad (A2.13)$$

$$E_{c_t} = R_{c_t} - 0.1(D_{c_t}^c + D_{p_t}^c) \quad (A2.14)$$

$$R_{c_t} = R_{c_o} + H_{c_r} + H_{p_r}, \quad r \leq t \quad (A2.15)$$

$$D_{p_t}^c - D_{p_{t-1}}^c = A_{c_{t-1}}^c - A_{p_{t-1}}^c = R_{p_t} - R_{p_{t-1}} \quad (A2.16)$$

$$A_{c_t}^c = M_{c_t}^c + (L_{p_t}^c - L_{p_{t-1}}^c) \quad (A2.17)$$

$$A_{p_t}^c = M_{p_t}^c + (S_{c_t}^p - S_{c_{t-1}}^p) \quad (A2.18)$$

$$D_{p_t}^p - D_{p_{t-1}}^p = (L_{p_t}^p - L_{p_{t-1}}^p) + (R_{p_t} - R_{p_{t-1}}) \quad (A2.19)$$

$$L_{p_t}^p - L_{p_{t-1}}^p = \text{the smaller of} \begin{cases} I_{p_t}^A - I_{p_{t-1}}^A \\ \frac{1}{2}E_{p_{t-1}} \end{cases} \quad (A2.20)$$

$$S_{c_t}^p - S_{c_{t-1}}^p = \text{the smaller of} \begin{cases} L_{p_t}^p - L_{p_{t-1}}^p \\ \frac{1}{2}E_{p_{t-1}} \end{cases} \quad (A2.21)$$

$$E_{p_t} = R_{p_t} - 0.2D_{p_t}^p \quad (A.22)$$

The situations depicted in Tables 7.1 to 7.3 are as follows.
In Table 7.1, $H_{c_1} = 10$, all other $H_{i_t} = 0$. In Table 7.2, $H_{p_1} = 10$
all other $H_{i_t} = 0$. In Table 7.3, H_{i_t} is defined as for Table 7.3,
and in addition, conditions (A2.20) and (A2.21) become:

$$L_{p_t}^p - L_{p_{t-1}}^p = \text{the smaller of} \begin{cases} I_{p_t}^A - I_{p_{t-1}}^A \\ E_{p_{t-1}} \end{cases} \quad (A2.23)$$

$$S_{c_t}^p - S_{c_{t-1}}^p = E_{p_{t-1}} - (L_{p_t}^p - L_{p_{t-1}}^p) \text{ subject to a maximum} \\ \text{of } \frac{1}{2}E_{p_{t-1}} \quad (A2.24)$$

BIBLIOGRAPHY

- ABBOTT, G C International Indebtedness and the Developing Countries (London: Croom Helm, 1979)
- ADEKUNLE, J O 'The Demand for Money: Evidence from Developed and Less Developed Economies', IMF Staff Papers Vol. 15 (1968), pp.220-266
- ALIBER, R Z 'The Integration of National Financial Markets: A Review of Theory and Findings', Weltwirtschaftliches Archiv, Vol. 114 (1978), pp.448-480
- ALTMAN, O L 'Quotas in the International Monetary Fund', IMF Staff Papers, Vol. 5 (Aug. 1956), pp.129-150.
- ARCHIBALD, G C and R G LIPSEY, 'Monetary and Value Theory: A Critique of Lange and Patinkin', Review of Economic Studies, Vol. 26 (Oct. 1958), pp.1-22.
- ARMSTRONG, H and J TAYLOR, Regional Economic Policy and its Analysis (Oxford: Philip Allan, 1978)
- AUFRICHT, H The International Monetary Fund: Legal Bases, Structure and Functions (London: Stevens and Sons, 1964).
- AVRAMOVIC, D et al. Economic Growth and External Debt (Baltimore: John Hopkins Press, 1964)
- BAILEY, M J 'The Welfare Cost of Inflationary Finance', Journal of Political Economy, Vol. 64 (Apr. 1956), pp.93-110.
- BAIROCH, P and M LÉVY-LEBOYER (eds.) Disparities in Economic Development since the Industrial Revolution (London: Macmillan, 1981)
- BALTENSPERGER, E 'The Precautionary Demand for Reserves', American Economic Review, Vol. 64 (Mar. 1974) pp.205-210.

- BAUMOL, W J 'The Transactions Demand for Cash: An
Inventory Theoretic Approach', Quarterly Journal of Economics
Vol. 66 (Nov. 1952), pp.545-556.
- BEARE, J B 'A Monetarist Model of Regional Business
Cycles', Journal of Regional Science, Vol. 16 (Apr. 1976)
pp.57-63.
- BEEK, D C 'Commercial Bank Lending to the Developing
Countries', Federal Reserve Bank of New York Quarterly
Review, Vol. 2 (Summer 1977), pp.1-8.
- BENSON, J N Provincial Government Banks: A Case Study
of Regional Response to National Institutions (Vancouver:
The Fraser Institute, 1978).
- BHADURI, A 'On the Formation of Usurious Interest
Rates in Backward Agriculture', Cambridge Journal of
Economics, Vol. 1 (Dec. 1977), pp.341-352.
- BHAGWATI, J N and R S ECKAUS (eds.) Development and Planning:
Essays in Honour of Paul Rosenstein-Roden (London: George
Allen and Unwin, 1972)
- BHAGWATI, J 'Immiserizing Growth: A Geometrical Note',
Review of Economic Studies, Vol. 25-26 (June 1958),
pp.201-205.
- BIRD, G The International Monetary System and the
Less Developed Countries (London: Macmillan, 1978)
- BLACKABY, F 'Symposium on The Problem of EMS', The
Banker (Jan. 1979), pp.24-27.
- BLAUG, M Economic Theory in Retrospect, third
edition (Cambridge: Cambridge University Press, 1978)

- BLAUG, M The Methodology of Economics, or how economists explain. (Cambridge: Cambridge University Press, 1980).
- Board of Governors of the Federal Reserve System, Committee on Rural Banking Problems, Improved Fund Availability at Rural Banks (Washington, D.C.: Board of Governors of the Federal Reserve System, 1975)
- BOLTZ, P W 'Surveys of Terms of Bank Lending: New Series', Federal Reserve Bulletin, Vol. 63 (May 1977), pp.442-455.
- BORTS, H G and J L STEIN Economic Growth in a Free Market (New York: Columbia University Press, 1964)
- BOTTOMLEY, A 'The Cost of Administering Private Loans in Underdeveloped Rural Areas', Oxford Economic Papers, Vol. 15 (June 1963), pp.154-163.
- BOULDING, K E and T F WILSON (eds.) Redistribution Through the Financial System: The Grants Economics of Money and Credit (New York: Praeger, 1978)
- BOWSHER, N N, J D DAANE and R EINZIG, 'The Flows of Funds Between Regions of the United States', Journal of Finance, Vol. 13, (Mar. 1958), pp.1-20.
- BOYES, W J and S D GERKING, 'A Liquidity Trap in the Foreign Exchange Market: The Case of Mexico', International Economic Review, Vol. 19 (Oct. 1978), pp.777-785.
- BRANDT, W (Chairman) North-South: A Programme for Survival, Report of the Independent Commission on International Development Issues (London: Pan, 1980)

- BROWNE, L E 'Narrowing Regional Income Differentials',
New England Economic Review (Sept/Oct 1980), pp.35-56.
- BROWNE, L E 'Narrowing Regional Income Differentials II',
New England Economic Review (Nov/Dec 1980), pp.40-59.
- BRYANT, R 'Empirical Research on Financial Capital
 Flows', in P B Kenen (ed.), International Trade and
 Finance: Frontiers for Research (Cambridge: Cambridge
 University Press, 1975), pp.321-362.
- CAGAN, P Determinants and Effects of Changes in the
 Stock of Money 1875-1960 (New York: Columbia University
 Press for NBER, 1965)
- CAIRNCROSS, A K Economic Development and the Atlantic Provinces
 (Fredericton, N B: Atlantic Provinces Research Board, 1961)
- CANADIAN BANKERS' ASSOCIATION, 'The Banks and the West: Facts,
 Figures and the Future' CBA Bulletin, Vol. 16 (July 1973),
 pp.1-16.
- CANTILLON, R Essai sur la Nature du Commerce en Général,
 ed. and tr. by H Higgs (London: Macmillan for the Royal
 Economic Society, 1931)
- CATSAMBAS, T Regional Impacts of Federal Fiscal Policy
 (Lexington, Mass.: Lexington Books, 1978)
- CEBULA, R J and M ZAHAROFF 'Interregional Capital Transfers
 and Interest Rate Differentials: An Empirical Note',
Annals of Regional Science, Vol. 8 (Feb. 1974), pp.87-94.
- CHRYSTAL, K A 'Demand for International Media of Exchange',
American Economic Review Vol. 67 (Dec. 1977), pp.840-850.

- CLARK, P B 'The Demand for International Reserves:
A Cross-Country Analysis', Canadian Journal of Economics,
Vol. 3 (Nov. 1970), pp.577-594.
- CLAYTON, G, J C GILBERT and R SEDGWICK (eds.) Monetary
Theory and Policy in the 1970s: Proceedings of the 1970
Sheffield Money Seminar (London: Oxford University Press,
1971)
- CLINE, W R International Monetary Reform and the
Developing Countries (Washington, D C: Brookings Institution,
1976)
- CLOWER, R W and R G LIPSEY 'The Present State of International
Liquidity Theory', American Economic Review, Vol. 58 (May 1968),
pp.586-595.
- COELEN, S P 'Regional Income Convergence/Divergence
Again', Journal of Regional Science, Vol. 18 (Dec. 1978),
pp.447-457.
- COHEN, B J Adjustment Costs and the Distribution of
New Reserves, Princeton Studies in International Finance
No. 18 (Princeton: Princeton University Press, 1966).
- CORDEN, W M 'Expansion of the World Economy and the
Duties of Surplus Countries', The World Economy, Vol. 1
(Jan. 1978), pp.121-134.
- CORDEN, W M Inflation, Exchange Rates and the World
Economy (Oxford: Clarendon Press, 1977)
- CORDEN, W M 'The Structure of a Tariff System and the
Effective Protective Rate', Journal of Political Economy,
Vol. 74, (June 1966), pp.221-237.

- CROCKETT, A International Money: Issues and Analysis
(Sunbury-on-Thames: Nelson, 1977)
- C S O 'Cyclical Indicators in the United Kingdom
Economy', Economic Trends, No. 257 (Mar. 1975), pp.95-109.
- C S O 'Cyclical Indicators: Some Developments and
an Assessment of Performance', Economic Trends, No. 319
(May 1980), pp.82-87.
- DAVIDSON, P Money and the Real World (London:
Macmillan, 1978)
- DAY, W H L and H R HELLER 'The World Money Supply: Concept
and Measurement', Weltwirtschaftliches Archiv, Vol. 113
(1977), pp.693-718.
- de CECCO, M 'Origins of the Post-War Payments System',
Cambridge Journal of Economics, Vol. 3 (Mar. 1979), pp.49-61
- de GRAUWE, P and T PEETERS 'The EMS, Europe and the Dollar',
The Banker (Apr. 1979), pp.39-45.
- DENTON, G (ed.) Economic and Monetary Union in Europe:
The Economic Implications of Monetary Integration
(London: Croom Helm, 1975).
- DESPRES, E , C P KINDLEBERGER and W S SALANT, 'The Dollar
and World Liquidity', in L H Officer and T D Willett (eds.)
The International Monetary System: Problems and Prosals
(Englewood Cliffs, N.J.: Prentice-Hall, 1969), pp.41-52
- de VRIES, M G The International Monetary Fund 1966-1971: The
System Under Stress, Vol. I (Washington, D.C.: IMF, 1976).

- DIAZ-ALEJANDRO, C F Less Developed Countries and the Post-1971 International Financial System, Princeton Essays in International Finance No. 108 (Princeton: Princeton University Press, 1975).
- di MARCO, L E (ed.) International Economics and Development: Essays in Honor of Raul Prebisch (London: Academic Press, 1972), pp.97-134.
- DIXON, R and A P THIRLWALL 'A Model of Regional Growth-Rate Differences on Kaldorian Lines', Oxford Economic Papers Vol. 27 (July 1975), pp.201-214.
- DOBLIN, E 'The Ratio of Income to Money Supply: An International Survey', Review of Economics and Statistics, Vol. 33 (Aug. 1951), pp.201-213.
- DREESE, R G 'Banks and Economic Development', Southern Economic Journal, Vol. 40 (Apr. 1974), pp.647-656.
- EATON, J and M GERSOWITZ 'LDC Participation in International Financial Markets: Debt and Reserves', Journal of Development Economics, Vol. 7 (Mar. 1980), pp.3-21.
- FAND, D I 'World Reserves and World Inflation', Banca Nazionale del Lavoro Quarterly Review, No. 115 (Dec. 1975), pp.347-369.
- FEDER, G and R E JUST 'An Analysis of Credit Terms in the Eurodollar Market', European Economic Review Vol. 9 (May 1977), pp.221-243
- FISHER, I The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crises, reprint of 1922 edition (New York: Augustus Kelley, 1963).

- FISHKIND, H H 'The Regional Impact of Monetary Policy:
An Econometric Simulation Study of Indiana 1958-73',
Journal of Regional Science, Vol. 17 (Apr. 1977), pp.77-88.
- FLANDERS, M J The Demand for International Reserves,
Princeton Studies in International Finance No. 27 (Princeton:
Princeton University Press, 1971)
- FLANDERS, M J 'Prebisch on Protectionism: An Evaluation',
Economic Journal, Vol. 74 (June 1964), pp.305-326.
- FLEMING, J M 'On Exchange Rate Unification', Economic
Journal, Vol. 81 (Sept. 1971), pp.467-488.
- FOSTER, J 'The Redistributive Effects of Inflation -
Questions and Answers', Scottish Journal of Political
Economy, Vol. 23 (Feb. 1976), pp.73-98.
- FRATIANNI, M and T PEETERS (eds.) One Money for Europe
(London: Macmillan, 1978)
- FRENKEL, J A 'The Demand for International Reserves by
Developed and Less-Developed Countries', Economica
Vol. 41 (Feb. 1974), pp.14-24.
- FRENKEL, J A and H G JOHNSON The Monetary Approach to the
Balance of Payments (Toronto: University of Toronto
Press, 1976)
- FRIEDMAN, M 'The Role of Monetary Policy', American
Economic Review, Vol. 58 (March 1968), pp.1-17.
- FRIEDMAN, M (ed.) Studies in the Quantity Theory of Money
(Chicago: Chicago University Press, 1956)
- FRIEDMAN, M 'A Theoretical Framework for Monetary
Analysis', Journal of Political Economy, Vol. 78 (Mar/
Apr. 1970), pp.193-238.

- FRIEDMAN, M 'Unemployment versus Inflation? An
Evaluation of the Phillips Curve', Institute of Economic
Affairs Occasional Paper No. 44 (1975)
- FRIEDMAN, M and A SCHWARTZ A Monetary History of the United
States 1867-1960 (Princeton: Princeton University Press, 1963)
- FRIEDMAN, M and A SCHWARTZ 'Money and Business Cycles', Review
of Economics and Statistics, Vol. 45 (1963), supplement, pp.32-64
- FRY, M J 'Money and Capital or Financial Deepening
in Economic Development?', Journal of Money, Credit and
Banking, Vol. 10 (Nov. 1978), pp.464-475.
- GAMBS, C M and D V KIMBALL 'Small Banks and the Federal Funds
Market', Federal Reserve Bank of Kansas City Economic Review,
(Nov. 1979), pp.3-12.
- GARCIA, G and S PAK 'The Ratio of Currency to Demand Deposits
in the United States', Journal of Finance, Vol. 34 (June,
1979), pp.703-715.
- GARVY, G and M R BLYN The Velocity of Money (New York: Federal
Reserve Bank of New York, 1969)
- GASKIN, M 'Credit Policy and the Regional Problem',
The Bankers' Magazine, Vol. 190 (Sept. 1960), pp.151-158.
- GASKIN, M The Scottish Banks: A Modern Survey (London:
George Allen and Unwin, 1965)
- GOLD, J Special Drawing Rights: Character and Use
(Washington, D.C: IMF, 1970)
- GOLDSMITH, R W Financial Structure and Development (New Haven
and London: Yale University Press, 1969)

- GREAT BRITAIN The European Monetary System, Cmdnd 7405
(London: HMSO, 1978)
- GREAT BRITAIN Proposals for an International Clearing Union
Cmdnd 6437 (London: HMSO, 1943)
- GRUBEL, H G 'The Demand for International Reserves:
A Critical Review of the Literature', Journal of Economic
Literature, Vol. 9 (Dec. 1971), pp.1148-1166.
- GRUBEL, H G Domestic Origins of the Monetary Approach
to the Balance of Payments, Princeton Essays in Inter-
national Finance No. 117 (Princeton: Princeton University
Press, 1976)
- GRUBEL, H G The International Monetary System (Harmondsworth:
Penguin, 1971)
- GRUBEL, H G (ed.) World Monetary Reform: Plans and Issues
(Stanford: Stanford University Press, 1964)
- GUCCIONE, A and W J GILLEN 'A Metzler-Type Model for the
Canadian Regions', Journal of Regional Science, Vol. 14
(Aug. 1974), pp.173-190.
- GURLEY, J G 'Financial Structures in Developing Economies',
in D Krivine (ed.) Fiscal and Monetary Problems in
Developing States (New York: Praeger, 1967), pp.99-116.
- HAAN, R L Special Drawing Rights and Development
(Leyden: Stenfert Kroese, N.V., 1971)
- HABERLER, G 'The Case Against the Link', Banca
Nazionale del Lavoro Quarterly Review, No. 96 (Mar. 1971)
pp.13-22.

- HABERLER, G 'Inflation as a World-Wide Phenomenon - An Overview', Weltwirtschaftliches Archiv., Vol. 110 (1974), pp.179-193
- HARROD, SIR R The Life of John Maynard Keynes (Harmondsworth: Penguin, 1972)
- HARTLAND, P 'Interregional Payments Compared with International Payments', Quarterly Journal of Economics, Vol. 63 (Aug. 1949), pp.392-407
- HAWKINS, R G and C RANGARAJAN, 'On the Distribution of New International Reserves', Journal of Finance, Vol. 25 (Sept. 1970), pp.881-891
- HAYTER, T Aid as Imperialism (Harmondsworth: Penguin, 1971)
- HELLEINER, G K 'The Less Developed Countries and the International Monetary System', Journal of Development Studies, Vol. 10 (Apr/July, 1974), pp.347-373.
- HELLER, H R 'International Reserves, Money and Global Inflation', Finance and Development, Vol. 13 (Mar. 1976) pp.28-30, 39.
- HELLER, H R 'Optimal International Reserves', Economic Journal, Vol. 76 (June 1966), pp.296-311.
- HELLER, H R 'The Transactions Demand for International Means of payment', Journal of Political Economy, Vol. 76 (Jan/ Feb. 1968), pp.141-145.
- HELLER, H R and M S KHAN 'The Demand for International Reserves under Fixed and Floating Exchange Rates', IMF Staff Papers Vol. 25 (Dec. 1978), pp.623-649.
- HINES, A G On the Reappraisal of Keynesian Economies (London: Martin Robertson, 1971)

- HIRSCHMANN, A O The Strategy of Economic Development
(New Haven: Yale University Press, 1972)
- HODJERA, Z 'International Short-Term Capital Movements:
A Survey of Theory and Empirical Analysis', IMF Staff Papers,
Vol. 20 (Nov. 1973), pp.683-740.
- HOLLAND, S Capital Versus the Regions (London: Macmillan,
1976)
- HYMANS, S H 'On the Use of Leading Indicators to Predict
Cyclical Turning Points', Brookings Papers on Economic
Activity, No. 2 (1973), pp.339-375.
- INGRAM, J C 'State and Regional Payments Mechanisms',
Quarterly Journal of Economics, Vol. 73 (Nov. 1959), pp.619-632.
- INTERNATIONAL MONETARY FUND (ed.) International Reserves: Needs
and Availability (Washington, D.C.: IMF 1970)
- ISHIYAMA, Y 'The Theory of Optimum Currency Areas: A Survey',
IMF Staff Papers, Vol. 22 (July 1975), pp.344-383.
- JOHNSON, H G 'Inside Money, Outside Money, Income, Wealth
and Welfare in Monetary Theory', Journal of Money, Credit
and Banking, Vol. 1 (Feb. 1969), pp.30-45.
- JOHNSON, H G International Trade and Economic Growth:
Studies in Pure Theory (London: George Allen and Unwin, 1958)
- JOHNSON, H G 'The Keynesian Revolution and the Monetarist
Counter-Revolution', American Economic Review, Vol. 61
(May 1971), pp.1-14.
- JOHNSON, H G and A K SWOBODA (eds.) The Economics of Common
Currencies (London: George Allen and Unwin, 1973)

- KALDOR, N 'The Case for Regional Policies', Scottish Journal of Political Economy Vol. 17 (Nov. 1970), pp.337-348.
- KAPUR, I 'An Analysis of the Supply of Euro-currency Finance to Developing Countries', Oxford Bulletin of Economics and Statistics, Vol. 39 (Aug. 1977), pp.171-188.
- KELLY, M G 'The Demand for International Reserves', American Economic Review, Vol. 60 (Sept. 1970), pp.655-667.
- KENEN, P B Capital Mobility and Financial Integration: A Survey, Princeton Studies in International Finance No. 39 (Princeton: Princeton University Press, 1976)
- KENEN, P B and E B YUDIN, 'The Demand for International Reserves', Review of Economics and Statistics, Vol. 47 (Aug. 1965), pp.242-250.
- KEYNES, J M 'Alternative Theories of the Rate of Interest', Economic Journal, Vol. 47 (June 1937), pp.241-252
- KEYNES, J M 'The "Ex-Ante" Theory of the Rate of Interest' Economic Journal, Vol. 47 (Dec. 1937), pp.663-669.
- KEYNES, J M 'The General Theory of Employment', Quarterly Journal of Economics, Vol. 51 (Feb. 1937), pp.209-223
- KEYNES, J M The General Theory of Employment, Interest and Money (London: Macmillan, 1936)
- KEYNES, J M 'How to Avoid a Slump', The Times, Jan. 11-14, 1937
- KEYNES, J M A Treatise on Money, The Collected Writings of John Maynard Keynes, Vols. V and VI (London: Macmillan for the Royal Economic Society, 1971)
- KHATKHATE, D R 'False Issues in the Debate on Interest Rate Politics in Less Developed Countries', Banca Nazionale del Lavoro Quarterly Review, No. 133 (June 1980), pp.205-224.

- KINDLEBERGER, C P The Formation of Financial Centers: A Study in Comparative Economic History, Princeton Studies in International Finance No. 36 (Princeton: Princeton University Press, 1974).
- KINDLEBERGER, C P International Economics (second, third and fourth editions) Homewood, Ill.: Richard D Irwin, 1958, 1963 and 1968, resp.)
- LAIDLER, D E W The Demand for Money : Theories and Evidence, second edition (New York: Harper and Row, 1977)
- LANCIERI, E 'Export Instability and Economic Development: A Reappraisal', Banca Nazionale del Lavoro Quarterly Review, No. 125 (June 1978), pp.135-152
- LEES, F A 'Interregional Flows of Funds through State and Local Government Securities (1957-1963)', Journal of Regional Science, Vol. 9 (Apr. 1969), pp.79-86.
- LEVHARI, D and D PATINKIN, 'The Role of Money in a Simple Growth Model', American Economic Review, Vol. 58 (Sept. 1968), pp.713-753.
- LIEBERMAN, C 'The Transactions Demand for Money and Technological Change', Review of Economics and Statistics, Vol. 59 (Aug. 1977), pp.307-317.
- LITHWICK, N H Regional Economic Policy: The Canadian Experience (Toronto: McGraw-Hill Ryerson, 1978).

- LOGUE, D E and M A. SALANT and R J SWEENEY, 'International Integration of Financial Markets: Survey, Synthesis and Results', in C H Stern, J H Makin and D E Logue (eds.) Eurocurrencies and the International Monetary System (Washington: American Enterprise Institute for Public Policy Research 1976), pp.91-137.
- MACHLUP, F (ed.) Economic Integration, Worldwide, Regional Sectoral (London: Macmillan 1976)
- MACHLUP, F, W S Salant and L TARSHIS (eds.) International Mobility and Movement of Capital (New York: NBER, 1972)
- MAGNIFICO, G European Monetary Unification (London: Macmillan, 1973)
- MANDEL, E Capitalism and Regional Disparities (Toronto: New Hogtown Press, 1973)
- MARSHALL, A Money, Credit and Commerce (London: Macmillan, 1923)
- MAYER, P A 'Price Discrimination, Regional Loan Rates, and the Structure of the Banking Industry', Journal of Finance, Vol. 22 (Mar. 1967), pp.37-48.
- MAYNARD, G and G BIRD, 'International Monetary Issues and the Developing Countries: A Survey', World Development, Vol. 3 (Sept. 1975), pp.609-631.
- McKINNON, R I Money and Capital in Economic Development (Washington, D.C.: Brookings Institution 1973).

- McKINNON, R I Money in International Exchange: The
Convertible Currency System (Oxford: Oxford University
Press, 1979)
- MEADE, J E 'The Balance-of-Payments Problems of a
European Free-Trade Area', Economic Journal, Vol. 67
(Sept. 1957), pp.379-396
- MEIER, G M Leading Issues in Economic Development:
Studies in International Poverty (Oxford: Oxford University
Press, 1970)
- METZLER, L A 'Wealth, Saving and the Rate of Interest',
Journal of Political Economy, Vol. 59 (Apr. 1951), pp.93-116.
- MILLER, F C 'The Feasibility of Regionally Differentiated
Fiscal Policies', University of Guelph Department of Economics
Discussion Paper No. 1979-6 (1979)
- MILLER, M H and D ORR, 'A Model of the Demand for Money by
Firms', Quarterly Journal of Economics, Vol. 80 (Aug. 1966)
pp.413-435.
- MILLER, R J The Regional Impact of Monetary Policy in the
United States (Lexington, Mass.: Lexington Books, 1978)
- MINSKY, H P (ed.) California Banking in a Growing Economy:
1946-1975 (Berkeley: University of California Institute of
Business and Economic Research, 1975)
- MINSKY, H P John Maynard Keynes (London: Macmillan, 1976)
- MORGAN, E V 'Regional Problems and Common Currencies',
Lloyds Bank Review, No. 110 (Oct. 1973), pp.19-30.

- MUNDELL, R A 'A Theory of Optimum Currency Areas',
American Economic Review, Vol. 51 (Sept. 1961), pp.657-665.
- MUNDELL, R A and A K SWOBODA (eds.) Monetary Problems of the
International Economy (Chicago: University of Chicago Press,
1970)
- MYRDAL, G Economic Theory and Under-developed Regions
(London: Methuen, 1964)
- NASH, M (ed.) Essays on Economic Development and Cultural
Change in Honor of Bert F Hoselitz, Economic Development and
Cultural Change Vol. 25 (1977), Supplement.
- NAYLOR, T The History of Canadian Business 1867-1914: The
Banks and Finance Capital (Toronto: James Lorimer & Co., 1975)
- O'DEA, D J Cyclical Indicators for the Postwar British
Economy, NIESR Occasional Paper No. 28 (Cambridge:
Cambridge University Press, 1975)
- OFFICER, L H 'The Demand for International Liquidity:
A Test of the Square-Root Law', Journal of Money, Credit
and Banking, Vol. 8 (Aug. 1976), pp.325-337.
- OHLIN, B Interregional and International Trade, revised
edition (Oxford: Oxford University Press, 1967).
- OLIVERA, J M G 'The Square-Root Law of Precautionary Reserves'
Journal of Political Economy, Vol. 79 (Sept/Oct. 1971),
pp.1095-1104

- PARK, Y C 'The Variability of Velocity: An International Comparison', IMF Staff Papers, Vol. 17 (Nov. 1970), pp.620-637
- PATINKIN, D Money, Interest and Prices: An Integration of Money and Value Theory, second edition (London: Harper and Row, 1966)
- PAYER, C The Debt Trap: The International Monetary Fund and the Third World (New York: Monthly Review Press, 1974)
- PEETERS, T et al. 'The All Saints Day Manifesto for European Monetary Union', The Economist, Vol. 257 (Nov. 1, 1975), pp.33-38
- PERLMAN, M 'International Differences in Liquid Asset Portfolios', in D Meiselman (ed.) Varieties of Monetary Experience (Chicago: University of Chicago Press, 1970), pp.297-337
- PFISTER, R L 'State and Regional Payments Mechanisms: A Comment', Quarterly Journal of Economics, Vol. 74 (Nov. 1960), pp.641-648.
- PHILLIPS, A 'Evidence on Concentration in Banking Markets and Interest Rates', Federal Reserve Bulletin, Vol. 53 (June 1967), pp.916-926.
- PREBISCH, R The Economic Development of Latin America and its Principal Problems (New York: Economic Commission for Latin America, UN Dept of Economic Affairs, 1950)
- PRESLEY, J R and G E J DENNIS Currency Areas : Theory and Practice (London: Macmillan, 1976)
- RADCLIFFE, LORD (Chairman) Report of the Committee on the Workings of the Monetary System Cmnd 827 (HMSO: London, 1959)

- RICHARDSON, H W 'Aggregate Efficiency and Interregional Equity',
Paper presented to the Regional Science Symposium, University
of Groningen, Netherlands (Sept. 1977)
- RICHARDSON, H W Regional Growth Theory (London: Macmillan, 1973)
- ROBERTS, C A 'Interregional Per Capita Income Differentials
and Convergence: 1880-1950', Journal of Economic History,
Vol. 39 (Mar. 1979), pp.101-112
- ROMANS, J T Capital Exports and Growth among U.S. Regions
(Middletown, Conn: Wesleyan University Press, 1965)
- RUFFIN, R J 'An Econometric Model of the Impact of Open
Market Operations on Various Bank Classes', Journal of
Finance Vol. 23 (Sept. 1968), pp.625-637.
- SARGEN, N 'Commercial Bank Lending to Developing
Countries', Federal Reserve Bank of San Francisco Economic
Review (Spring 1976), pp.20-31.
- SARGEN, N 'Economic Indicators and Country Risk
Appraisal', Federal Reserve Bank of San Francisco Economic
Review (Fall 1977), pp.19-35.
- SAYERS, R S 'Ricardo's Views on Monetary Questions',
Quarterly Journal of Economics, Vol. 67 (Feb. 1953), pp.30-49.
- SCITOVSKY, T Economic Theory and Western European Integration
(London: George Allen and Unwin, 1958)
- SCITOVSKY, T 'The Theory of the Balance of Payments and
the Problem of a Common European Currency', Kyklos,
Vol. 10 (1957), pp.18-44.
- SCOTT, I O 'The Regional Impact of Monetary Policy',
Quarterly Journal of Economics, Vol. 69 (May 1955), pp.269-284.

- SEARS, J. T Institutional Financing of Small Business in Nova Scotia (Toronto: University of Toronto Press, 1972)
- SHAW, E S Financial Deepening in Economic Development (New York: Oxford University Press, 1973)
- SHORT, G D and B B WHITE 'International Bank Lending: A Guided Tour Through the Data', Federal Reserve Bank of New York Quarterly Review, Vol. 3 (Autumn 1978), pp.39-46.
- SHORT, J and D J NICHOLAS A Study of Money Flows in the Regions of the United Kingdom 1974/75 to 1977/78 (Durham: University of Durham, 1979)
- SILBER, W L (ed) Financial Innovation (Lexington, Mass.: Lexington Books, 1975)
- STEEDMAN, I (ed) Fundamental Issues in Trade Theory (London: Macmillan, 1979)
- STEIN, J L (ed) Monetarism (Amsterdam: North-Holland, 1976)
- STRASZHEIM, M R 'An Introduction and Overview of Regional Money Capital Markets', in J F Kain and J R Meyer (eds.) Essays in Regional Economics (Cambridge, Mass.: Harvard University Press, 1971), pp.218-239.
- SYRON, R F 'Regional Experience during Business Cycles: Are We Becoming More or Less Alike?' New England Economic Review (Nov/Dec 1978), pp.25-34.
- TALLEY, S H 'The Effect of Holding Company Acquisitions on Bank Performance', Staff Economic Studies, No. 69 (Washington, D.C.: Board of Governors of the Federal Research System, 1971)

- TALLEY, S H 'The Impact of Holding Company Acquisitions
on Aggregate Concentration in Banking', Staff Economic Studies
No. 80 (Washington, D.C.: Board of Governors of the
Federal Reserve System, 1974)
- THIRLWALL, A P 'The Balance of Payments Constraint as an
Explanation of International Growth Rate Differences',
Banca Nazionale del Lavoro Quarterly Review No. 128
(March 1979), pp.45-53
- THIRLWALL, A P Financing Economic Development (London:
Macmillan, 1976)
- THIRLWALL, A P Growth and Development: with Special
Reference to Developing Economies, second edition
(London: Macmillan, 1978)
- TOBIN, J 'Money and Economic Growth', Econometrica,
Vol. 33 (Oct. 1965), pp.671-684.
- TRIFFIN, R 'The Myth and Realities of the so-called
Gold Standard', in R N Cooper (ed.), International Finance
(Harmondsworth: Penguin, 1969), pp.38-61.
- TRIFFIN, R 'National Central Banking and the International
Economy', Review of Economic Studies, Vol. 14 (Feb. 1947),
pp.53-75.
- TSIANG, S C 'The Diffusion of Reserves and the Money
Supply Multiplier', Economic Journal, Vol. 88 (June 1978),
pp.269-284.
- TUN WAI, U 'Interest Rates Outside the Organised
Money Markets of Underdeveloped Countries', IMF Staff Papers
Vol. 6(1957-8), pp.80-142.

- U N C T A D International Monetary Issues and the Developing Countries, TD/B/32 (TD/C/C.3/6) (New York, 1965)
- U.S. Senate, Committee on Appropriations, Selected Essays on Patterns of Regional Change: The Changes, The Federal Role and the Federal Response (Washington, D.C.: U.S. Government Printing Office, 1977).
- U.S. Senate, Subcommittee on Financial Institutions of the Committee on Banking, Housing and Urban Affairs, Compendium of Issues Relating to Branching by Financial Institutions, (Washington, D.C.: U.S. Government Printing Office, 1976)
- VAIZEY, J (ed.) Economic Sovereignty and Regional Policy
(Dublin: Gill and Macmillan, 1975)
- VERNON, R 'The Product Cycle Hypothesis in a New International Environment', Oxford Bulletin of Economics and Statistics, Vol. 41 (Nov. 1979), pp.255-267.
- WEINTRAUB, S The Foreign-Exchange Gap of the Developing Countries, Princeton Essays in International Finance No. 48
(Princeton: Princeton University Press, 1965)
- WELLANS, P A Borrowing by Developing Countries on the Euro-Currency Market (Paris: O.E.C.D., 1977)
- WERNER, P Report to the Council and Commission on the Realization by Stages of Economic and Monetary Union in the Community, Supplement to Bulletin 11-1970 of the European Communities, (Brussels: E.E.C., Oct. 1970)

- WEST, R C Banking Reform and the Federal Reserve
1863-1923 (Ithaca: Cornell University Press, 1977)
- WHITMAN, M von N International and Interregional Payments Adjustment
A Synthetic View, Princeton Studies in International Finance
 No. 19 (Princeton: Princeton University Press, 1967)
- WILLIAMSON, J 'Don't Surplus Countries Have Obligations?'
The World Economy, Vol. 1 (Oct. 1978), pp.419-426
- WILLIAMSON, J The Failure of World Monetary Reform 1971-74
 (Sunbury-on-Thames: Thomas Nelson, 1977)
- WILLIAMSON, J 'International Liquidity: A Survey', Economic
Journal, Vol. 83 (Sept. 1973), pp.685-746.
- WILLIAMSON, J G 'Regional Inequalities and the Process of
 National Development: A Description of the Patterns',
Economic Development and Cultural Change, Vol. 13 (July,
 1965, Part II), pp.3-84
- WILSON, T 'The Price of Oil: A Case of Negative
 Marginal Revenue', University of Glasgow Discussion Paper
in Economics No. 26 (Nov. 1978)
- WILSON, T 'The Regional Multiplier - A Critique',
Oxford Economic Papers Vol. 20 (Nov. 1968), pp.374-393.
- WILSON, T , R P SINHA and J R CASTREE, 'The Income Terms
 of Trade of Developed and Developing Countries', Economic
Journal, Vol. 79 (Dec. 1969), pp.813-832.

